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What Subjects Should the Premedical Student Study?

EARL J. MCGRATH
Dean of Administration, University of Buffalo
Buffalo, New York

The members of the medical profession, like those of other professional groups, attempt to maintain high standards of competence in their membership by exercising some control over the education of those who seek admission to the profession. This control embraces not only medical education proper but to some extent premedical instruction as well. In addition to these formal requirements of official agencies, the course elections of premedical students are often determined by advice from practicing doctors or from college teachers. Such advice usually relates to the types of courses the student will find most influential in gaining admission to medical school or most helpful in maintaining a good record in medical school. Since the majority of premedical students complete more than the two years of college commonly required for admission to medical schools, the student has considerable latitude in the selection of courses. It is important that in making up his mind concerning the types of subject matter he is to study during the preprofessional years, he should have the most reliable information concerning the relationship between college courses and the technical instruction of the medical school.

Educators, members of the medical profession, and laymen as well express widely varying opinions concerning the number and types of college courses students should pursue in preparation for the study of medicine. It is often contended, for example, that students who wish to make a superior record in medical school and rapid advancement in the profession should concentrate in the natural sciences. An opposing school of thought holds that the premedical student should take only the required courses in natural science, and spend whatever additional time may be available in the study of subject matter in other fields such as social sciences, humanities, and fine arts. This view assumes that since medical instruction is composed almost exclusively of scientific subjects, the student should take advantage of the opportunity afforded in the arts college to broaden his knowledge in other fields.

Another controversy revolves around the number of years a prospective doctor should spend in premedical education. An increasingly large percentage of educators both in the medical profession and in arts colleges believe that a doctor, occupying the important position in the community that he does, should

have as much general education as he can afford. This broad education, it is asserted, is essential if the doctor is to deal intelligently with the varied problems of medical practice, and with the problems he will encounter along with men and women in all walks of life. The fact that 96 per cent of applicants for admission to medical school present more than the required two years of premedical education shows that this point of view has had some influence.

An opposing theory holds that the most successful doctors are those who have perfected their medical knowledge and skills by spending several years in internships or research work. Since the preparation for the practice of medicine is long at best, it is argued that instead of extending the period of general education the prospective doctor might better satisfy the formal educational requirements as quickly as possible and use the time thus saved in postgraduate training in the art of medical practice.

One who follows the discussions of these issues observes that the arguments, though often convincing, rest on little objective evidence. It is true that many of the issues involved cannot be decided except on the basis of opinion because no reliable evidence yet exists. Insofar as possible, however, decisions regarding educational policy should be validated by careful studies of their effects. Certainly a matter of such crucial significance as admissions policies should be tested through studies of the relationship between courses in the premedical program and in the medical school. Some patterns of premedical education may be found to be positively related to success in medical school, and others may be discovered to have no positive relationship whatever.

A study recently completed at the University of Buffalo had as its primary purpose the collection of whatever objective evidence could be found which would illuminate these issues relating to premedical education, to the end that uninformed or prejudiced opinion might be replaced by fact in the formulation of admissions policies and in advisory service to prospective medical students. The study included 366 medical students, the total membership of five classes graduating in alternate years, from 1932 to 1940. The records of 56 students who did not complete the course because of academic failure were included in the study in order to discover in what respects their premedical records differed from those of successful students.

Admission to the University of Buffalo Medical School since the entrance of the first class included in this study has been based on the completion of at least two years of college instruction including courses in physics, biology, inorganic and organic chemistry, English composition and rhetoric, and two years of a foreign language. All the students in this study, therefore, had completed at least these courses and sufficient elective subjects to make up a college program of two years. But every year since 1932, until the accelerated programs of the war years reversed this trend, the proportion of students who had completed more than this minimum requirement has increased. Though 53 per cent of the students in the class of 1932 had completed only two years of college education at entrance, this percentage had dropped to 33 in 1940. Hence, in

studying the relationship between premedical education and success in medical school, consideration had to be given to courses other than those required for admission.

This study is concerned with three variables in premedical education, the first of which is the number of hours of instruction the student had in his premedical program in the natural sciences, the social sciences and the humanities. Under the natural sciences were included such subjects as physics, biology, chemistry, geology and astronomy, and the various subdivisions of these disciplines. Other similar classifications were made of the social sciences and humanistic studies. The college records of five classes of medical students were examined and a notation made of the number of hours credit each student presented for admission in these three divisions of knowledge. To make the records of students from different institutions comparable, credits from colleges operating on the quarter plan or some other type of organization were converted into semester hours. Students were then classified in terms of the number of hours of premedical instruction they had completed in these three fields.

TABLE 1.—CORRELATION BETWEEN NUMBER OF HOURS OF CREDIT IN VARIOUS PREMEDICAL SUBJECTS AND AVERAGE GRADES IN MEDICAL SCHOOL COURSES.

Average Grade in	Hours of Natural Science	Hours of Social Science	Hours of Humanities
Basic Medical Sciences	—0.02	+1.14	—0.04
Clinical Subjects	—0.04	+0.07	—0.12
All Medical School Subjects	—0.07	+0.02	—0.19

In relating these figures to success in the medical school, the subjects were divided into the basic sciences, such as anatomy and physiology, and the clinical courses, such as pediatrics and surgery. This classification was based on the assumption that some types of college instruction might be more closely related to the basic medical sciences than to clinical subjects.

Correlations showing the relationships between the number of hours of credit in three types of college courses and grades in medical school subjects are shown in table 1.

Though the correlations in table 1 vary slightly, they are strikingly similar. They all approach 0.00 meaning that there is no significant relationship between the number of hours of instruction a student has completed in college in the three main divisions of knowledge and success in the medical school. In the concrete, this means that some students who take many courses in natural science in college achieve high standing in the medical school, but just as often students who take few courses do just as well. Natural science majors, on the other hand, sometimes do poorly, indeed, flunk out of medicine, as one student did who had had 90 hours of instruction in natural science.

The import of these findings in discussions of admission standards is that the student who presents a heavy concentration in any of the subject-matter fields should not *for that reason* be considered a superior candidate for the study

of medicine. These findings are at variance with advice which premedical students often receive from faculty members and personnel officers in colleges of arts and sciences. Students who choose the medical profession as their vocational objective are quite naturally interested in studying those college subjects which will not only assist them in gaining admission to a medical school but which will give them the best preparation for the difficult subjects in the medical course of study. When they seek advice as to which subjects are most likely to produce these results, students are frequently advised to elect courses in the natural sciences in addition to those normally required for admission. By so doing, they are told they will enhance their chances for admission, and gain an advantage in the medical school over their college classmates who pursued a broad selection of courses or whose programs were composed predominantly of social science or humanistic studies. On the basis of this advice, many students of catholic academic interests refrain from electing a wide variety of courses to which they are by nature and previous study inclined.

The figures in table 1 show that students who enroll for many courses in the natural sciences beyond the basic requirements have no advantage, other things being equal, over those who elect courses from a wide variety of college departments or who concentrate in the social sciences or in the humanities. That this generalization concerning medical students at the University of Buffalo has wider validity is evident from the studies of Dr. Fred C. Zapffe, secretary of the Association of American Medical Colleges, long a student of admissions practices. Dr. Zapffe found in studying the college records of students admitted to a number of medical schools that premedical students who major in the sciences have no advantage in medical school over those who major in other departments.

If, therefore, no handicap attends the election of a wide variety of premedical courses it would seem desirable to advise students to avoid early specialization in science unless they are irresistibly drawn in that direction by interest and ability. A doctor is something more than a technical practitioner—at least the better doctor is. He meets, talks with, counsels, and must understand persons in all walks of life. Moreover, he is often prominent in the civic and social activities of his community. And modern medical practice ramifies more and more into areas of life, such as industrial medicine, with which the physician of fifty years ago had little or no professional concern. If the members of the profession are to participate intelligently in these varied activities, they should receive the broadest possible education. If they can study a wide variety of subject matter without sacrificing professional competence, they should be encouraged to do so.

This study does not provide evidence that would confirm or deny the validity of the other type of advice often given premedical students, namely, that they can improve their chances for admission to medical school by concentrating in science in college. It is true, however, that in some medical schools the committee on the selection of students gives preference to those whose college record

includes advanced courses in physics, chemistry, or biology, some of which, it should be pointed out, like parasitology and bacteriology, largely duplicate courses in the medical curriculum. There is, therefore, an element of truth in the statement that additional instruction in scientific fields may increase the student's chances for admission to a medical school. Insofar as the findings in this study have wider validity, however, such admission practices rest on a false assumption. Moreover, it is clear that students may be misled into a sense of false security, for although they may thus gain admission to a medical school by studying advanced courses in science, they do not thereby improve their standing in courses in medicine. Admission committees may confidently place less emphasis on the types of courses the student presents for admission and give greater consideration to other aspects of premedical records.

Unfortunately, the results of this study do not permit any conclusion concerning the value of the required courses in physics, chemistry, biology, English and foreign language, because in this respect the program of every student is identical with that of every other student. Hence, what a student without a course in physics or biology would be able to do in medical study cannot be inferred, but it seems reasonable to assume that students of superior intellectual

TABLE 2.—CORRELATIONS BETWEEN GRADE POINT AVERAGES IN PREMEDICAL SUBJECTS WITH AVERAGE GRADES OF STUDENTS IN MEDICAL SCHOOL.

Average Grade in	Grade Point Average in Natural Sciences	Grade Point Average in Social Sciences	Grade Point Average in Humanities	Grade Point Average in All Courses
Basic Medical Sciences	+0.48	+0.41	+0.27	+0.40
Clinical Subjects	+0.32	+0.22	+0.21	+0.30
All Medical School Courses	+0.43	+0.39	+0.22	+0.38

endowment and training who could not satisfy all the premedical requirements could successfully complete the medical course. Dr. Zapffe, discussing this question says:

> "Personally, I would accept a fine Greek scholar, or one with a good education in the classics or in mathematics without sufficient credits to meet the minimal requirements in chemistry, physics, or biology because I would feel certain that he would do well in his medical studies. He is a student; a scholar. He can learn what he must know without placing too great a strain on his intellect[1]."

This opinion of Dr. Zapffe leads to a consideration of the second principal variable in premedical education, which can be introduced by the question: "In the selection of medical students how much consideration should be given to general intellectual ability as represented by high grades?" This question is answered in the figures in table 2 which show the relationships between grades in various types of premedical courses and grades in medical school courses.

The figures in this table indicate a positive relationship between the grades

1. Zapffe, Fred C.: "The Relation Between General Education and Medical Education," National Society for the Study of Education, Thirty-eighth Yearbook, Part II, Public School Publishing Company, Bloomington, Ill., 1938, p. 225.

a student receives in college courses and the average of his grades in medical school. There are several differences, however, in the closeness of these relationships. College grades in natural science and grades in the basic sciences in the medical school are most closely related, as shown by a correlation of +0.48 which, though by no means perfect, shows that students who make a good record in natural science in college are likely to make a good record in the basic medical sciences. It will be observed, however, that grades in the social sciences are only slightly less predictive of success in medical school, and the avetage grade in all college courses is likewise significant. Though correlations between college grades and clinical subjects are somewhat lower than those between college grades and basic medical subjects, a positive relationship nevertheless indicates that success in college subjects is also predictive of success in the clinical aspects of medical practice. This is in sharp contrast with a similar study of dental students which showed that no grades in any of the courses in college were predictive of success with the professional skills of dental practice.[2]

TABLE 3.—COMPARISON OF COLLEGE RECORDS OF 56 ACADEMIC FAILURES IN FIVE MEDICAL CLASSES WITH RECORDS OF 56 SUPERIOR STUDENTS.

Number of Hours	Students Who Failed	Superior Students
Natural Science	60.4	58.2
Social Science	12.4	11.4
Humanities	41.1	28.0
Grade Point Average		
Natural Science	0.96	1.81
Social Science	0.84	1.48
Humanities	1.05	1.60
All College Subjects	1.01	1.74
Average grade in all courses in medical school	67.3	89.2

Students who get the highest grades do not invariably turn out to be the most competent members of the profession. It would be a mistake, therefore, to select medical students solely on the basis of their academic records. But insofar as the previous education of the student is employed as a criterion, only those factors which can be demonstrated to be valid indications of probable success in medical school should be used. If this principle is accepted, one conclusion which may be drawn from the facts presented in tables 1 and 2 is that as far as the student's previous academic record is concerned the best indication of probable success in medical school is to be found in the grades the student received in college, especially in the natural sciences. In simple terms, the results of this study show that the medical schools will get the best students by selecting those whose college records show that they have been good students in the past.

The intellectual pace in medicine, especially in the first two years, is swift. Apparently the student who has superior ability, and efficient habits of work, even if he does not possess as much specialized knowledge as the student who anticipated medical school instruction by electing college courses like bacteriology,

2. McGrath, Earl J.: "Predictive Value of Grades in Various Types of Predental Courses," *J. Dental Education*, Vol. VII, No. 1, October 1942, pp. 46-55.

anatomy and biochemistry, has an advantage over the less able student who may at the outset have a fuller knowledge of science.

To throw into high relief the differences between the failures and the superior students, the college records of the highest ranking 56 students were compared with the records of the 56 students who failed. This comparison, presented in table 3, confirms the generalization derived from the correlations exhibited in tables 1 and 2. In the number of hours of instruction in the three divisions of knowledge the students who failed varied little from the superior students—the failures presented, on the average, thirteen hours more in the humanities than did the superior students. The failures also had on the average 2.2 hours more of natural science than did the superior students. The failures averaged almost exactly a C grade in their college courses while the superior students were only slightly below a B. The advantage of this intellectual superiority became more apparent in the medical school where the difficulty of the instruction accentuated the difference between the two groups, for the failures received a C grade in college but an F in medical school, while the superior students received the equivalent of an A in medical school.

This study was concerned with a third variable in premedical education which is set forth in the question: "Do medical students who present more than the required two years of college work make better records in the medical

TABLE 4.—GRADES OF FIVE CLASSES OF MEDICAL STUDENTS WITH TWO, THREE AND FOUR YEARS OF PREMEDICAL EDUCATION.

Grades in	Two Years Premedical Education	Three Years Premedical Education	Four or More Years Premedical Education
Basic Medical Sciences	81.9	80.5	81.1
Entire Medical Course	82.8	81.9	82.1

school than those who merely meet the minimum requirements?" In order to secure evidence on this issue, the medical students in these five classes were divided into three groups: those who had had two years, those who had had three years, and those who had had four or more years of premedical education. Table 4 shows the average grades which the members of these three groups made in the basic medical sciences and in the entire medical course.

The figures show that University of Buffalo medical students who present for admission no more than the required two years of premedical education complete the medical course with a higher average grade than students who have either three or four years of premedical education. This statement also holds for grades in the basic medical sciences alone. Students with three years of premedical education receive the lowest average grades of any of the three groups of students.

If these figures are representative of students in other medical schools which admit students with two years premedical education, the question may fairly be asked: "If students with two years of premedical education can satisfactorily complete the medical school course, why do some medical schools require three

and others four years of college education for admission?" The data in this study do not directly provide the answer to this question, but several inferences bearing on it can be made. In the first place, one reason for the superiority of the two year premedical students over the other two groups is their superior college record. The average of the grades of two year students was 1.43, of the three year students 1.12, and of those with four or more years of premedical education 1.27. These figures reveal the intellectual advantage with which those who had only two years premedical education began the study of medicine. It is not surprising that they should hold this advantage over their classmates. Again, it may be inferred, therefore, that it is not the amount of education they have had which makes them superior—for they had less than the others; it is the quality of their intellectual performance that counts.

If these same two year students had gone on for two more years they would have had just as good a record in medical school, or better. And in addition to their superior medical record, they would have had the advantage of a broader liberal education which would have been of value not only in the practice of medicine but in their lives as laymen. Whether medical students should be required to complete three or four years of college education before entering the medical school is a question, therefore, which should not be decided on the basis of their medical school record, but on the basis of the value of additional general education in later life. Economic factors, naturally, have a bearing on this problem, for it would undoubtedly be discovered that the majority of the superior two year premedical students would have completed a degree program if they had been economically able to do so. It would seem a policy of doubtful social wisdom to raise the entrance requirements in all medical schools beyond two years of college education, thus placing an almost insurmountable obstacle in the path to the medical profession for superior students of little financial means, until adequate scholarship assistance is available to them.

If, however, the doctor is to continue to occupy a position of importance in American society, quite aside from his services in the prevention and cure of disease, he should have a broad liberal education comparable to that of his college classmates who enter other professions and positions of leadership in the world of business and industry. It would seem desirable, therefore, to persuade premedical students to continue their college careers as far as they are able, and if possible, to the bachelor's degree. It would also seem the part of wisdom to advise them to take full advantage of the whole variety of instruction offered in colleges of arts and sciences in order that the profession may maintain the position of prestige it now occupies among educated persons, and in order that the profession may bring to bear on its own problems the widest variety of intellectual competence and understanding. If medical schools will select students in terms of their general intellectual ability and the breadth of their previous education, they will be choosing the students most likely to succeed in the study of medicine and most likely to make the greatest contribution to the profession of medicine and to the society in which they live.

The Future of Medical Education*

CHARLES F. BRANCH
Dean, Boston University School of Medicine
Boston, Massachusetts

No one can gainsay the fact that the acceleration of medical education has also accelerated the tempo of the present conflict. Never in the history of the world have soldiers in the field so benefited from adequate, organized medical care. The phenomenally low mortality rate of the wounded cannot be ascribed entirely to the miracle of chemotherapeutics and shock therapy. Someone had to be on the spot to apply them. The world wide scope of this war, its sheer mobility,—presented problems of fluidity never before dreamed of by the field medical services but for once in this war, we were there "fustest with the mostest."

Medical education is the foundation of good medical service. The conditions of profound social and economic upheaval that may prevail following the war will require major changes in medical practice. The implication of 57,000 doctors now taking care of 11,500,000 men under arms is of impelling significance in the sound planning for future medical care. Impending social reforms suggested by the Beveridge Report,—the Medical Planning Commission of the British Medical Association,—the Murray-Wagner-Dingle bill—, considered in relation to the medical advances of the past three decades, should stimulate us to take stock and re-evaluate 200 years of American medicine. This is not a provincial thought but is impelled by postwar world needs. Just what these may be is at the moment somewhat nebulous, but do not forget that even as the world will be looking to us for aid in social, economic and industrial rehabilitation, so, too, it will expect medical assistance from America. It has been the privilege of my generation to live through the coming of age of American medicine and our dominant leadership has been recognized only since the last world war. We shall have to provide physicians of many types, in many fields for many corners of the earth. Our great Foundations frankly warn us that after the war they must use their funds for world rehabilitation and not to support medical education in the United States.

Our numerous agencies of medical standardization can scarcely be accused of negligence in the matter of postwar planning, but the British have bested us in the audacity and penetration of their self analysis. The reports of their Interdepartmental Committee on Medical Schools,—Sir William Goodenough, chairman, and of the Planning Committee of the Royal College of Physicians, are remarkable statements and independently come to almost identical conclusions. Among other things the Goodenough report recommends:

1. Drastic overhauling of undergraduate training with more attention being paid to social medicine, child health, mental health, protection of health and the prevention as well as the care of disease.

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* Commencement address delivered at the University of Vermont College of Medicine, September 13, 1944.

2. Coeducation in medical schools and sex equality in hospitals.
3. Greatly increased Government grants for medical education:
   A. To support undergraduate medical students.
   B. To discover, train and support research workers.
4. Reform of the examination system.
5. Compulsory hospital appointments.
6. Changes in policies and organization of medical schools and teaching hospitals,—with particular emphasis on more full time teachers and salaries for part time teachers.
7. A comprehensive system for training specialists.
8. Development in London of a world center for postgraduate education and research.
9. Linking of all major hospitals with teaching centers.

A magnificent bit of critical introspection and one which we can well afford to emulate! Until the threat of socialized medicine shook us loose from the smugness of our moorings, it has been a long time since American medicine carefully checked its bearings. Now, if ever, the medical schools have an opportunity to reassess, re-evaluate and reconstruct. It is, perhaps, small satisfaction that the Goodenough report shows us that the disciplined curriculum of the American system of medical education has, in general, led us along the paths of righteousness. There are still great gaps in our thinking. And those of us who have struggled with the accelerated program have been forced back on an old, old conclusion that the European system of education developed the "teen age" youth to much greater maturity through disciplined thinking and less spoon feeding.

Many considerations of medical education in the past have completely ignored the fact that premedical education is as much a part of that concept as postgraduate training. Alan Gregg[1] recently advised that the medical schools make a studied effort to foster good teaching in the premedical sciences. It certainly is axiomatic that good teachers, plus good students, equal education. Anything less cannot be tolerated in medicine. The Goodenough report lays down the principle that "Unsuitability for a medical career shall be the sole barrier to admission to a medical school." That takes in a lot of territory. We think that we have been quite clever in our selection of medical students,—what with our aptitude tests, our Army and Navy screening programs, a more or less full analysis of personality, background, physical and mental capacity and financial responsibility. Yet, from year to year, we are constantly faced with the living evidence of the ineffectuality of our best effort. Although we have been brought up in an era when it was quite common to "work one's way through," there can be little doubt that most of those hardy souls suffered culturally and scholastically and no one can say what heights they might have attained if they could have applied themselves wholly to the task in hand. We need full time

1. Gregg, Alan: Can Excellence Be Learned? J. A. A. M. Coll. 19:105-110 (March) 1944.

students as well as full time teachers. Numerous educators have repeatedly pointed out that cultural advancement and intellectual maturity go hand in hand. I am constantly impressed that a large percentage of our medical students lack a vigorous intellectual life outside of their chosen field, without which they cannot hope to attain the highest professional success and reputation.

Premedical requirements have developed slowly through the years. Someone is always complaining that it takes too long to become a physician. It cannot take too long to train a physician. To paraphrase J. P. Morgan's famous yacht philosophy,—if you have to consider the time and funds at your disposal for medical training, you had better give up the idea of studying medicine. Soon, tremendous pressure will be brought to bear on every school in the country to accept many of the returning service men whose inadequate basic training was interrupted by the war. All of us will have to make an effort to cooperate and do what we can for some of these boys, but it will have to be with a continued wink at medical standards that forces beyond our control have already lowered to the breaking point.

The Association of American Medical Colleges and the Council on Medical Education require two years of college work and the latter recommends three years for entrance to medical school. Most medical faculties would welcome a full four year requirement. The problem of the returning service man seeking training in professional fields must be approached with intelligent flexibility and carefully considered advice, but the G. I. Bill of Rights and a veteran's status must not abrogate the prewar admission standards of the medical schools.

There must be better planning of all phases of medical education both vertically and horizontally, and although the vertical integration is, perhaps, more strikingly needed in premedical and postgraduate training, horizontal development within the undergraduate curriculum is of paramount importance.

The accelerated teaching program has been roundly damned, yet without it, it is entirely conceivable that the success of our arms might not be so apparent. One of its sponsors and staunchest supporters, Dr. Victor Johnson[2] has strongly recommended that certain aspects of the accelerated schedule be continued after the war. Under such a plan, by admitting a class once a year but retaining the acceleration feature, a man would graduate in three lineal years, yet if the curriculum were arranged properly, his instructors in each successive year would have their three months' vacation period. This would admittedly do away with some of the deficiencies of the "convoy" system but it would still retain the major disadvantages to student performance, morale and health, inherent in the accelerated program. Dr. Johnson argues that it remains to be demonstrated that the accelerated program allows insufficient time for the student to master the material presented. It is not clear to him why a medical student should be able to do good work for only three quarters of the year. Never again after leaving medical school will he have an annual three months' vacation period!

2. Johnson, Victor: Effects of the Accelerated Program of Medical Schools on the Curriculum, Faculty and Students. J. A. A. M. Coll. 19:70-76 (March) 1944.

Very few medical school administrators, faculties or students with whom I have talked feel that the game is worth the candle. We accept immature men and turn out immature doctors. We overburden the faculty with an increased teaching load, without increased compensation, and we take away their time for investigative work. The upper third of the class would respond and easily prove that excellence should be pushed, but the lower third of the class would as usual prove that "progressive education" is not for the masses and that in contradistinction to the convoy system, the cafeteria system is only for those whose digestion can stand it and who have the native intelligence to choose their diet wisely.

One of our greatest undergraduate needs is to revise the curriculum horizontally, delete dead wood, reduce course content and add new material.

The close horizontal integration of subjects such as physiology and its intelligent expansion into and collaboration with anatomy, chemistry, pathology and pharmacology as well as the intensely important clinical physiology of medicine and surgery, has all too commonly been neglected. Now, with the postwar reconstruction of faculties and facilities, it is increasingly important that the new order be set up with a long range analysis of past performance and a view of future needs and development.

It has long been a poorly practiced theory of medical education that the student should be taught method and principle rather than fact, thus providing him with a mental discipline which will allow him to maintain a program of self education. It is conceivable that much factual material should be drastically reduced in the present curriculum and postponed until advanced training has shown what career the doctor wishes to pursue. While a student is untrained in clinical methods and has not arrived at the level of differential diagnosis, it is wasteful and confusing to put him to work on the wards where the chief concern is the treatment of the sick and where the examples of disease encountered are complex. Only the advanced student has the equipment and background to justify this kind of experience.

One of the chief needs of practically every undergraduate program is one constantly being set forth as the prerogative of professors,—namely, time for reading, reflection and possibly the beginnings of research. This need for thoughtful contemplation of one's particular relation to the field of medicine is justly reflected in the constantly increasing demand for more electives. The nightmare of the curriculum committee is a recent preliminary report of one of our national planning committees which recommends that the whole structure of medical education must be reviewed in the light of international service and rehabilitation. They point out that most curricula suffer at the moment from absence of detailed instruction in trauma, burns and shock; neuropsychiatry and psychosomatic medicine; public health and industrial health; biophysics and physical medicine; tropical medicine; chemotherapeutics; geriatrics; genetics; legal medicine; nutrition; environment and aviation physiology. True, and how many

schools in the country have even the semblance of a course on medical ethics, economics and sociology?

It is quite apparent that more material cannot be added to our already overcrowded undergraduate curriculum unless other subject matter is withdrawn, the content of courses now in force is reduced, or a fifth year of undergraduate study be added to a field already too time consuming. It is a serious question how much of this will contribute to the encouragement of a more thoughtful and critical mental outlook and a truer understanding of the manifestations and causes of disease.

The recruitment of a faculty after the war will be a major problem of many medical schools. Practically every school in this country was built by a clinical faculty who gave devoted service in return for the honor of academic standing and the questionable privilege of attracting a consulting practice from their graduates. Affectionately recognizing the debt of American medicine to these men and their high ideals, the desirability of this system has been questioned by many. Universities and medical colleges must look toward more full time clinical teachers and an appropriate remuneration for part time teachers. For many years there has been a trend in large clinical centers toward the procurement and support of full time clinical professors. These are a logical adjunct and complement to the preclinical staff in medical schools. Admittedly, this tends to develop highly impersonal and specialized clinics but there can scarcely be any comparison between the factual teaching offered by a professor in such a position and the cursory, often dilatory endeavor of the professor with a busy practice. The full time clinical professor, with adequate time for reading, reflection and research, lecturing on material gathered from his studies, may well present a more stimulating and incisive concept of the practice of medicine. On the other hand, I believe that the sympathetic and understanding cohesion of the psyche and the soma accomplished by the family consultant under the guise of common sense is a fundamental of the physician's art. It was never better taught than by our preceptors, and is a phase of medicine poorly understood and little practiced in our assembly line clinics.

In all probability, the pattern of medical education has swung too far in the direction of undergraduate training. Of the three major phases of medical education, the war has most sharply outlined postgraduate study. Scores of articles have been written on the subject and the recent sampling survey of the Council on Medical Education of the American Medical Association has attempted to crystallize the ideas of the man involved,—the "lost generation," who had their graduate training rudely terminated by the 9-9-9 program. The magnitude of the problem confronting the hospitals and medical schools of the country is seemingly insurmountable. All agencies concerned are doing their utmost to make preparation for the returning service men and their integration with the oncoming crop of interns and residents. Residencies, fellowships, postgraduate courses, refresher courses, continuation courses are almost a "must" in this day of progressive medical science. Advances in the prevention, diagnosis,

care and treatment of diseases have progressed almost beyond the realm of understanding and continuing changes make it virtually imperative for the intellectual awareness of the doctor as well as the physical welfare of his patient, to participate in or avail himself of some form of refresher course annually. The mediums of education afforded by the radio, magazines and newspapers, in many instances serve to keep the patients better informed as to the cause and effect of their maladies than their local doctor who does not have the time to indulge himself in these simple pleasures.

As we approach the new Fall term, and the fourth accelerated program, medical school administrators the country over begin to worry about deceleration. As I have pointed out, strong forces are suggesting that acceleration be continued in one form or another. It is possible that its disadvantages have been over-emphasized and that its advantages have not been clearly outlined, but in our school, acceleration has made it impossible to keep standards at a satisfactory level. We look forward to that postwar day when those of us responsible for teaching the young idea how to shoot, may elevate our sights to a trajectory that allows a mature student time to digest and assimilate the fare prepared by an adequate faculty,—a faculty not pressed with overloads and with ample time for research and cogitation. We believe that the only royal road to learning in medical education is in developing a disciplined mind through a disciplined curriculum.

In closing, let me remind you that you of Vermont have a great heritage, one that I would not exchange for all the high-pressure medicine in the world. You have had the privilege of studying under some of the finest teachers of the old school,—men who fully appreciate that the patient is still the unit of practice,—and who know that the patient is a very poor and very sick bit of human clay, apprehensive and badly in need of ministrations of faith, laying-on-of-hands and a kindly, rugged philosophy not found in test tubes. You must not be blind to the advances of medical science and research,—nor entirely ignore socialized medicine but do not forget that above all else you are physicians.

The Correlation Conference

E. L. Amidon
Associate Professor of Medicine
and
H. B. Pierce
Professor of Physiological Chemistry
University of Vermont College of Medicine

In an effort to effect a more efficient transition from preclinical to clinical training, a type of conference was devised which we believe to be unique. The creative thought as well as a large part of the success of these conferences is due to Dr. E. H. Buttles, our professor of pathology. In the fall of 1935, after consultation with several departments, it was decided to arrange a series of conferences. These exercises were to be presented each week to members of the second year class during the second semester. Fourteen two hour meetings were scheduled, at which some of the more common manifestations of disease would be discussed. It was agreed that all of the preclinical departments would be represented by one or more members, and as many clinical instructors as would attend.

The chief aims of this endeavor were threefold. There was to be a determined effort to explain the production of symptoms in terms of physiology, biochemistry, pathology and anatomy. The significance of various symptoms would be considered, and logical methods of cure or prevention would be suggested. Perhaps one of the most definite aims was to acquaint the preclinical instructors with the point of view of the clinical teachers and vice versa. These conferences begun ten years ago have been continued each year since.

At the time the series of conferences start, during the second semester, the second year class has had one semester of pathology, bacteriology, pharmacology, and is beginning clinical pathology and introductory courses in medicine, surgery and obstetrics.

The subjects of the conferences are selected so as to cover some of the more important manifestations of disease. One instructor is chosen to have charge of each conference. It is planned that subjects will be rotated each year, and that one instructor will preside at only one conference. The chairman serves as a moderator to guide the discussion, to keep it moving, to preserve parliamentary order, and often to terminate discussion. A fairly typical schedule is the one followed last year and is as follows:

May 11	Diabetes mellitus	June 29	Hypertension
May 18	Acidosis	July 6	Obstructive jaundice
May 25	Congestive heart failure	July 13	Lead poisoning
June 1	Nephritis	July 27	Hepatitis
June 8	Pneumonia	Aug. 3	Peptic ulcer
June 15	Addison's disease	Aug. 10	Pernicious anemia
June 22	Intestinal obstruction	Aug. 24	Pregnancy

A copy of the case history is given to each student one week before the meeting. It consists of a very brief history and a summary of the physical findings, together with the laboratory data which are essential. The diagnosis in each case is usually quite obvious and the student is told to pick out the prominent signs, symptoms and laboratory findings, and to attempt to explain their origin in this case. During these conferences a frank and informal type of discussion between the students and faculty is encouraged. The students are questioned by the instructors, and, in turn, are free to question the instructors. As each of the preclinical courses are represented, a student's question is referred to the department concerned. During these exercises the preclinical teachers have an opportunity to observe how well the students retain and use the information derived from their respective preclinical courses, and they may gain valuable information for improvement of their courses. The clinical teachers are usually impressed by the amount of information the students have gained, and are also able to obtain pertinent indications as to what information the students lack. The clinical teachers are thus able to determine more accurately the content and arrangement of courses in their respective departments. A summary of one such case history, used last year, is as follows:

CORRELATION CONFERENCE
May 11, 1944

A man of 60, previously well, has gradually lost weight and strength during the last year in spite of a good appetite. He is thirsty and passes much urine both day and night. His physical examination discloses no abnormal findings except a blood pressure of 160/100. The 24 hour urine amounted to 4,000 c.c.; was acid; with a specific gravity of 1.030; sugar 5%, acetone 2 plus. The fasting blood sugar was 300 mg%.

The subject of diabetes has been assigned to different departments during the past years. The symptoms are first covered from the clinical angle, i. e., polyuria as contrasted to frequency, polyphagia, dehydration, and weight loss; how determined. The mechanisms of production of these symptoms are then covered by discussion between students and faculty. The discussion of polyuria usually brings up consideration of hyperglycemia which, in turn, leads to the discussion of insulin, what it is, where it is produced, what it does, where it does it, and, as in the above case, what happens when it is not present in sufficient amount. A discussion of the causes of the weight loss in the presence of an increased intake of food may be satisfied by the suggestion of the loss of sugar in the urine until the instructor demonstrates by calculation the inadequacy of this answer. It is obvious that a review of the metabolism of carbohydrates is included, together with a consideration of the function of the pancreas, liver, intestinal tract, as well as the role of the kidney in the production of the glycosuria. As indicated in the schedule, acidosis is considered at the next conference, and the metabolism of fats, and proteins are discussed at this time. If an impassé is reached, the student may be asked to report at the beginning of the next conference the results of his study on any particular problem. At the close of the meeting, the chairman gives a brief summary of conclusions reached, perhaps adding information as to the subsequent history of the patient.

In our experience, the preclinical instructors carry the greater part of the

load. The application of basic principles, and the interpretation of clinical signs and symptoms due to abnormal physiology and biochemistry is often difficult. When accurate knowledge is lacking, the students are so informed, and an attempt is made to acquaint them with what is known and what is theory. As the students and faculty have common sources of reference, there is little reason for not coming to a mutual understanding. It is during such a conference that the inadequacy of the average textbook is apparent. Frequently lists of pertinent articles in medical journals are posted in advance by the instructor who will serve as chairman.

As these conferences afford a general review of the courses taken during the first two years in medical college, they constitute the basis for the sophomore comprehensive examination, and for state and National Board examinations.

The most difficult problem we have had to correct was the tendency of instructors to argue details, forgetting at the time that the sessions were meant for the students and not for the instructors. This was corrected by an understanding that for the most part the instructors would not respond unless so requested. Occasionally an instructor in charge would attempt to make a lecture period out of the session. The exercises are far more informative when the instructor works out the case by questions and answers. If the student is called on by name, he is more apt to prepare himself before the meeting. It has been suggested that the sessions would be more impressive if patients were presented. In some of these conferences this might be helpful. These meetings are not meant to be clinical conferences, and the presentation of a patient would add to the length of the session which is now kept to two hours only by considerable effort on the part of the chairman.

We feel that the benefits derived from these conferences are all that were expected and in addition some that were not foreseen. Not only the students but the faculty as well has been greatly helped. The exercises have constituted a review of the preclinical subjects for both the students and faculty. They serve to demonstrate to the students the reason for the preclinical instruction. They also seek to explain the origin and significance of some of the more common symptoms seen in disease. They have developed cooperation between the preclinical and clinical instructors, and a better understanding of the problems of each. During the discussions a much closer acquaintance between the faculty and students is made. The dean and department heads have an opportunity to observe the manner in which the instructors handle the assignments. Probably one of the greatest assets is the stimulation of the faculty to be prepared and alert to answer questions in their fields.

After ten years' experience with the conference as above described, we are satisfied that it is of exceptional teaching value, both to the students and faculty.

The Role of the Northeastern Medical Schools (exception New York) in the National Distribution of Physicians

Distributional Studies. III.

A. M. Lassek
Professor of Anatomy, Medical College of the State of South Carolina
Charleston, South Carolina

The role of the approved, non-approved and extinct medical schools in the national distribution of physicians has been studied in the following eleven northeastern states as of 1942: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Vermont and West Virginia. These relatively wealthy states comprise 150,250 square miles (5.0%) of territory and in 1942 they had 26,487,358 or 20.1 per cent of our total population. They were supplied by 38,802 or 21.5 per cent of the physicians of the United States. This gives a general ratio of 1:682 which is favorable when the overall situation in this country is taken into account. Thirty-eight of the largest cities in these states had a proportion of one physician for every 419 people. This means that the very large urban centers were much better supplied than the smaller communities and rural areas.

In 1942, there were physicians living who had graduated from thirteen approved, one non-accepted and fourteen extinct medical schools from this northeastern area. The approved medical schools are represented by the following: Vermont, Yale, Harvard, Boston, Tufts, Maryland, Johns Hopkins, Pennsylvania, Jefferson, Hahnemann, Woman's Medical College of Pennsylvania, Pittsburgh and Temple. The non-approved school is Middlesex in Massachusetts. One of the extinct schools was located in Massachusetts; five were in Pennsylvania; eight were in Maryland.

There were 38,805 living graduates from all these medical institutions scattered over the United States in 1942. Jefferson Medical College led with 5,298. The others were as follows: Pennsylvania, 5,099; Harvard, 4,277; Tufts, 3,180; Maryland, 3,097; Johns Hopkins, 2,637; Hahnemann, 2,457; Pittsburgh, 1,927; Temple, 1,703; Vermont, 1,337; Boston, 1,321; Yale, 1,184 and the Woman's Medical College of Pennsylvania, 897. The graduates of the extinct and non-approved medical schools numbered 4,391.

The living graduates of the combined institutions had the following regional distribution: to the northeast 29,288 (75.5%); southeast, 3,000 (7.7%); middlewest, 2,946 (7.6%); northwest, 553 (1.4%); southwest, 597 (1.6%); far west, 1,553 (4.0%); and the District of Columbia, 868 (2.2%). Three-quarters of the graduates had remained, therefore, largely close to their alma mater.

Irrespective of whether these schools were privately or state controlled, most had a relatively high migratory value of graduates. Of the living graduates of Johns Hopkins 81.3 per cent resided outside of Maryland in 1942. Similar values for the other schools are as follows: Vermont, 74.2%; Maryland, 64.5%;

Yale, 62.8%; Woman's Medical College of Pennsylvania, 61.0%; Harvard, 59.1%; Boston, 52.7%; Jefferson, 52.5%; Pennsylvania, 50.2%; Hahnemann, 45.5%; Tufts, 42.0%; Temple, 32.9% and Pittsburgh, 16.4%.

The regional distribution of the various schools is as follows: Of the 5,298 living graduates of Jefferson, 3,706 (71.2%) were in the northeast; 547 (9.6%) were in the southeast; 457 (8.6%) were in the middle states; 115 (2.2%) resided in the northwest; 95 (1.8%) were practicing in the southwest; 242 (4.0%) had settled in the far west, whereas 136 (2.6%) were in the District of Columbia.

Pennsylvania, with 5,099 living graduates, had the following regional distribution: the northeast, 3,503 (68.7%); southeast, 530 (10.4%); middle states, 488 (9.6%); northwest, 94 (1.8%); southwest, 92 (1.8%); far west, 252 (4.9%); and the District of Columbia, 140 (2.8%).

Harvard, with 4,277 living graduates, had the following distribution to the seven regional divisions of the United States: northeast, 3,022 (70.7%); southeast, 221 (5.2%); middle states, 464 (10.8%); northwest, 104 (2.4%); southwest, 66 (1.5%); far west, 323 (7.6%); District of Columbia, 77 (1.8%).

The 3,180 living graduates of Tufts had the following regional distribution: northeast, 2,929 (92.1%); southeast, 44 (1.4%); middle states, 74 (2.3%); northwest, 9 (0.3%); southwest, 13 (0.4%); far west, 62 (2.0%); and the District of Columbia, 49 (1.5%).

Maryland had 3,097 living graduates in 1942. These had the following regional distribution: northeast, 2,152 (69.5%); southeast, 559 (18.0%); middle states, 139 (4.5%); northwest, 33 (1.1%); southwest, 32 (1.0%); far west, 64 (2.1%); and the District of Columbia, 118 (3.8%).

Johns Hopkins, with 2,637 living graduates, had the following regional distribution: northeast, 1,386 (52.6%); southeast, 386 (14.6%); middle states, 439 (16.6%); northwest, 47 (1.8%); southwest, 71 (2.7%); far west, 201 (7.6%); and the District of Columbia, 107 (4.1%).

Hahnemann had 2,457 living graduates with the following distribution: northeast, 2,106 (85.7%); southeast, 64 (2.6%); middle states, 158 (6.4%); northwest, 13 (0.5%); southwest, 13 (0.5%); far west, 65 (2.7%); the District of Columbia, 38 (1.6%).

Pittsburgh, with 1,927 living graduates, had the following regional distribution: northeast, 1,688 (87.6%); southeast, 41 (2.1%); middle states, 113 (5.9%); northwest, 8 (0.4%); southwest, 8 (0.4%); far west, 40 (2.1%); and the District of Columbia, 29 (1.5%).

Temple, with 1,703, ranks next in respect to total number of living graduates and had the following regional distribution: northeast, 1,441 (84.6%); southeast, 81 (4.8%); middle states, 76 (4.5%); northwest, 13 (0.7%); southwest, 11 (0.6%); far west, 39 (2.3%); and the District of Columbia, 42 (2.5%).

Vermont, with 1,337 living medical graduates, had a regional distribution

as follows: northeast, 1,160 (86.8%); southeast, 33 (2.4%); middle states, 52 (3.9%); northwest, 9 (0.7%); southwest, 8 (0.6%); far west, 45 (3.4%); District of Columbia, 30 (2.2%).

The regional distribution of Boston, with 1,321 living graduates, was as follows: northeast, 1,171 (88.7%); southeast, 29 (2.2%); middle states, 56 (4.2%); northwest, 4 (0.3%); southwest, 3 (0.2%); far west, 41 (3.1%); District of Columbia, 17 (1.3%).

Yale had 1,184 living graduates with the following regional distribution: northeast, 952 (80.4%); southeast, 44 (3.7%); middle states, 97 (8.2%); northwest, 9 (0.8%); southwest, 12 (1.0%); far west, 44 (3.7%); and the District of Columbia, 26 (2.2%).

TABLE 1.—THE REGIONAL DISTRIBUTION OF LIVING GRADUATES, IN ABSOLUTE NUMBERS, OF THE THIRTEEN ACCEPTED, NON-ACCEPTED AND EXTINCT MEDICAL SCHOOLS OF THE NORTHEASTERN STATES (EXCEPTION NEW YORK) IN 1942.

School	Total No.	Respective State	Entire Northeast	Southeast	Middle States	Southwest	Northwest	Far West	D.C.
Jefferson	5,298	2,517	3,706	547	457	96	115	242	136
Pennsylvania	5,099	2,538	3,503	530	488	92	94	252	140
Harvard	4,277	1,750	3,022	221	464	66	104	323	77
Tufts	3,180	1,845	2,929	44	74	13	9	62	49
Maryland	3,097	1,100	2,152	559	139	32	33	64	118
Johns Hopkins	2,637	494	1,386	386	439	71	47	201	107
Hahnemann	2,457	1,340	2,106	64	158	13	13	65	38
Pittsburgh	1,927	1,611	1,688	41	113	8	8	40	29
Temple	1,703	1,143	1,441	81	76	11	13	39	42
Vermont	1,337	345	1,166	33	52	8	9	45	30
Boston University	1,321	625	1,171	29	56	3	4	41	17
Yale	1,184	440	952	44	97	12	9	44	26
W. M. C. Pa.	897	370	660	60	85	9	13	61	9
Extinct	4,391		3,412	361	248	164	82	74	50
	38,805		29,288	3,060	2,946	597	553	1,553	868

The Woman's Medical College of Pennsylvania had the smallest number of living graduates of any of the approved medical schools in the states under consideration, namely 897. They had the following regional distribution: northeast, 660 (73.6%); southeast, 60 (6.7%); middle states, 85 (9.5%); northwest, 13 (1.4%); southwest, 9 (1.0%); far west, 61 (6.8%); the District of Columbia, 9 (1.0%).

The living graduates of the fourteen extinct and the one non-approved medical schools numbered 4,391. They had the following distribution in the various regions of the United States: northeast, 3,412 (77.7%); southeast, 361 (8.2%); middle states, 248 (5.7%); northwest, 82 (1.9%); southwest, 164 (3.7%); far west, 74 (1.7%); the District of Columbia, 50 (1.1%).

In 1942, there were 38,802 physicians located in the eleven states under consideration. Of this number, 28,998 (74.8%) were supplied by northeastern schools; 1,909 (4.9%) graduated from southeastern schools; 2,577 (6.6%) were from midwestern medical institutions; 116 (0.3%) came from the southwest; 150 (0.4%) attended schools in the far west; 1,479 (3.8%) came from

the schools of the District of Columbia; 2,202 received their diplomas from foreign institutions whereas 1,200 (3.0%) gave no information as to their schools of graduation.

COMMENTS

The approved, non-approved and extinct medical schools situated in the states of Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, Pennsylvania, Rhode Island, Vermont and West Virginia, had 38,805 living graduates in 1942 who were scattered over the forty-eight states of the union. Medical schools which are now approved by the standardizing boards graduated 34,414, whereas 4,391 attended non-approved or extinct institutions.

TABLE 2.—THE REGIONAL DISTRIBUTION OF GRADUATES, IN PERCENTAGES, OF THE THIRTEEN ACCEPTED, NON-ACCEPTED AND EXTINCT MEDICAL SCHOOLS OF THE NORTHEASTERN STATES (EXCEPTION NEW YORK) IN 1942.

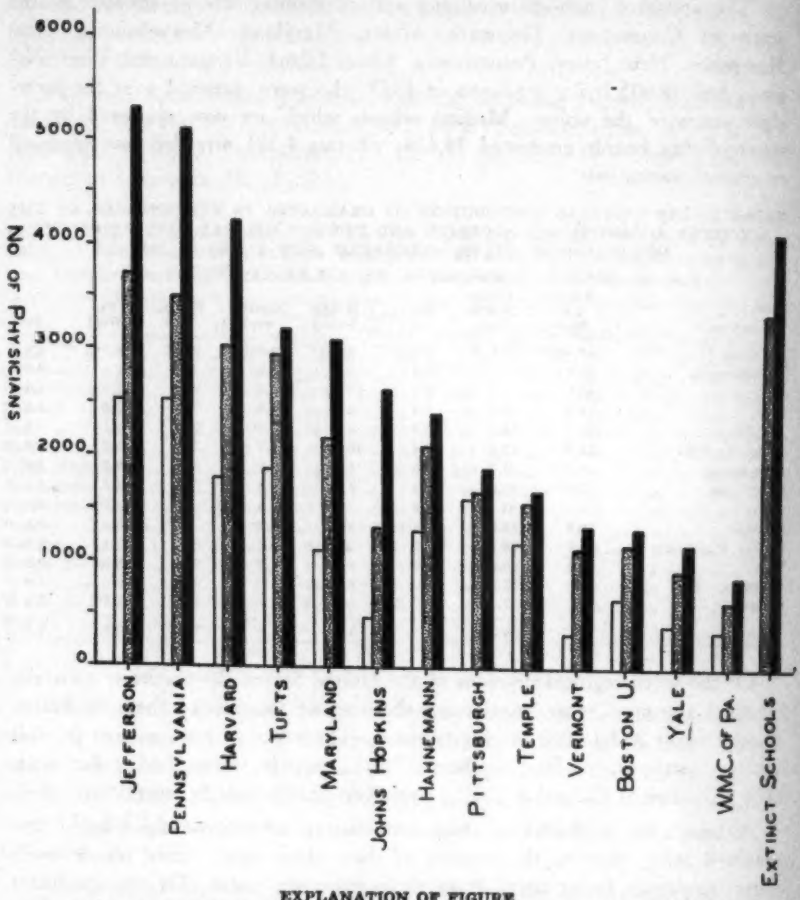
School	Respective State	Entire Northeast	Southeast	Middle States	Southwest	Northwest	Far West	D.C.
Jefferson	47.5%	71.2%	9.6%	8.6%	1.8%	2.2%	4.0%	2.6%
Pennsylvania	49.8	68.7	10.4	9.6	1.8	1.8	4.9	2.8
Harvard	40.9	70.7	5.2	10.8	1.5	2.4	7.6	1.8
Tufts	58.0	92.1	1.4	2.3	0.4	0.3	2.0	1.5
Maryland	35.5	69.5	18.0	4.5	1.0	1.1	2.1	3.8
Johns Hopkins	18.7	52.6	14.6	16.6	2.7	1.3	7.6	4.1
Hahnemann	54.5	85.7	2.6	6.4	0.5	0.5	2.7	1.6
Pittsburgh	83.6	87.6	2.1	5.9	0.4	0.4	2.1	1.5
Temple	67.1	84.6	4.8	4.5	0.6	0.7	2.3	2.5
Vermont	25.8	86.8	2.4	3.9	0.6	0.7	3.4	2.2
Boston University	47.3	88.7	2.2	4.2	0.2	0.3	3.1	1.3
Yale	37.2	80.4	3.7	8.2	1.0	0.8	3.7	2.2
W. M. C. Pa.	39.0	73.6	6.7	9.5	1.0	1.4	6.8	1.0
Extinct		77.7	8.2	5.7	3.7	1.9	1.7	1.1
Average		75.5	7.7	7.6	1.6	1.4	4.0	2.2

Of the seven regional divisions of the United States, the northeast naturally benefited the most when considering the sites of location of these graduates. Three-fourths had settled in this territory. The exact percentages are the following: northeast, 75.5%; southeast, 7.7%; middle states, 7.6%; far west, 4.0%; District of Columbia, 2.2%; southwest, 1.6% and the northwest, 1.4%.

Although the graduates of these northeastern schools, on the whole, have remained fairly close to the location of their alma mater, there was a much larger migratory factor away from their respective states. Of the graduates of Johns Hopkins, for instance, which is a private institution, 81.3 per cent settled elsewhere than in the state of Maryland. That this is not characteristic of private institutions alone, who may have a broader choice of students, is indicated by the fact that Vermont had a 74.2 per cent and Maryland a 64.5 per cent migratory factor. Two Pennsylvania schools, Pittsburgh and Temple, had the least migration out of their state, the values being only 16.4 per cent and 32.9 per cent, respectively. The other schools were intermediate between these figures in respect to migration.

The study suggests that there are several important factors in the migra-

tion of medical graduates. First, the northeast represents the richest region relatively in the United States, which may partly account for the fact that three-fourths of the graduates remained in this territory. The region located the farthest from the northeast, namely, the far western states which represents



EXPLANATION OF FIGURE

A graph showing the distribution of the living graduates of the approved northeastern schools of medicine in 1942. White column—number of physicians in respective state. Stippled column—number of physicians in northeastern region. Black column—number of physicians in the United States.

the second richest region, drew a fairly large contingent of graduates from the northeast, at least many more than the southwest or northwest. A second feature to be considered is that the location of the school may be of significance. Schools which are situated adjacent to the borders of another region will have a larger migratory value. The home of the student is undoubtedly another important and pertinent consideration but I am not in a position to make any comments on this phase of the question.

One fourth of all the physicians registered in the northeastern states under consideration in this study immigrated from outside of the region. The northeastern schools, including those in New York state, supplied 74.0 per cent. Other regions which contributed are the following: schools of the middle states, 6.6 per cent; foreign schools, 5.7 per cent; southeast, 4.9 per cent; District of Columbia, 3.8 per cent; unknown schools, 3.0 per cent; northwest, 0.5 per cent; far west, 0.4 per cent; and the southwest, 0.3 per cent. With the exception of the District of Columbia, the northeastern states have supplied more graduates to all the other regions of the United States than it has received from them.

Since the eleven northeastern states included in this statistical study had 38,805 living graduates scattered over the United States in 1942, and since there were 38,802 physicians practicing in these same states, it is obvious that if all the living graduates had settled in their own states the ratio of doctors to the population would be unchanged.

Taking into account the schools in New York state, the entire northeast had supplied 59,638 of the 180,496 registered physicians of the country in 1942. Therefore, this territory, comprising one-fourth of the national states, had supplied one-third of all our physicians.

CONCLUSIONS

1. The northeastern area (exception New York state) represents a portion of the United States whose approved, non-approved and extinct medical schools had supplied 38,805 (21.5%) of the 180,496 registered physicians in 1942.

2. 75.5% of these 38,805 had settled in the northeast; 7.7% in the southeast; 7.6% in the middle west; 4.0% in the far west; 2.2% in the District of Columbia; 1.6% in the southwest and 1.4% in the northwest.

3. The ranking of the accepted medical schools in respect to total number of living graduates was as follows: Jefferson, Pennsylvania, Harvard, Tufts, Maryland, Johns Hopkins, Hahnemann, Pittsburgh, Temple, Vermont, Boston, Yale and the Woman's Medical College of Pennsylvania.

4. The five schools supplying the greatest relative numbers of registered physicians to the northeastern states under consideration are the following in order of rank: Tufts, Boston, Pittsburgh, Vermont and Hahnemann.

5. The five schools having the greatest migration from their respective states are as follows: Johns Hopkins, Vermont, Maryland, Yale and Woman's Medical College of Pennsylvania.

6. Of the 38,802 physicians located in the northeastern states, 74.0% graduated from northeastern schools whereas 26.0% immigrated to this part of the United States from extra-regional schools.

7. The general ratio of doctors of medicine to the population in the eleven northeastern states studied was 1:682 in 1942. Eighty-three of the largest cities of the region had a ratio of 1:419.

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What Medical Students Think About the Medical School*

Shakespeare, in his tragedy "Julius Caesar," permitted Mark Anthony to make a speech which I am sure all of you remember. This address by Mark Anthony had a rather devastating effect on most of the other characters in the drama. Anthony began by calling the assembled countrymen "Friends." We intend to borrow this salutation from Mr. Shakespeare and we feel that we can call you gentlemen our friends. It is our earnest desire that when this address is finished we may continue to call you our friends. Too, we hope that our address will not lead to distressing incidents that would be even remotely akin to those that followed Mark Anthony's speech.

First, as a group we wish to thank you for permitting us the privilege of making these suggestions to you. We feel that it is an honor to have been chosen to talk with you concerning methods for making the school a better institution—a medical school that will produce better physicians.

When we were first called together and informed of the idea of this discussion we will admit that we felt that we would be bound to make this address a rather weak thing in which we would, as a group, be limited to making three or four suggestions that would do no harm, but certainly could do no good. However, each of the members of your program committee has assured us as a group and individually that we are to speak freely. Too, we have assured your program committee that it is not our idea to deal in personalities, nor is it our intention to criticize. Rather we want to make suggestions. Many of the suggestions that we will present are ideas which many of you probably had long before we became students in this institution and for various reasons have been unable to put them into effect.

To begin let us define for you our idea of the goal of a good medical school. That goal may be stated as follows: the modern medical school should graduate a man at the end of four years of medical training who could do general practice after taking one or two years of internship, or a man who would have the necessary basic training in the fundamentals of medicine so that he might go on into any specialty he might select, research or otherwise. We think that a proper training in fundamentals could and would do all these things. The basic principles, while useful most to the prospective general practitioner, are just as suitable as a basis for the man who intends to specialize or for the man who wants to do research. In other words, as a medical student there is no need that an attempt be made to teach the man the details that a physiologist or a specialist in pathology should know. Rather, let him understand the basic principles of the subjects that are to be taught. If he wishes to be a specialist in any of the fields he will have to learn the details as he takes graduate training leading to speciali-

* A group of five senior medical students were asked by a local chapter of the American Association of University Professors to give their point of view on the ideal medical school. Here it is.

zation or to work in research. In this way all the graduates would be expected to know fundamentals rather than have graduates produced who have attempted to learn everything but who have succeeded in remembering little or nothing.

We realize, of course, that the State finances the medical school so that a certain number of good physicians may be graduated from the medical school each year. We also know that a medical school gains prestige by means of its accomplishments in research fields, as well as by the ability of its graduates. This research should go on but it should be possible to teach well organized medical courses as well as do work in research. There is no reason that either field should be slighted or sacrificed for the other. However, the State expects most of all that good physicians should be trained here. We think the State is not wrong to demand this.

Taking this discussion of the medical school as our major premise, we wish to present to you a few suggestions which we think might assist this goal to be achieved. We are going to make certain suggestions concerning how this goal may be obtained in *a* medical school—not in this school, but in *a* medical school. If any of you think these ideas may be applied to this school you will think so by your own inference. We do not deny nor affirm. However, let us emphasize that these suggestions are for an ideal medical school, not necessarily a workable institution, but in our mind one that could achieve the goal that we have discussed previously.

First, a state supported medical school requires sufficient appropriation so that the faculty may be well paid; so that the best men may be attracted to that school; so that research may be done in that school; so that the school may have the proper physical equipment to train physicians.

We have a suggestion to make that we believe would assure that school of adequate finances. In every community throughout most states the physicians, while not necessarily actively engaged in politics, usually have sufficient political prestige to favorably influence appropriation measures in which they are interested. We think that a school should make up a booklet outlining its desires to cooperate with the physicians throughout the state and also to describe the methods by which it is training the future doctors of the state and how this can benefit all those concerned with the practice of medicine. A copy of this booklet should be mailed to every physician in the state and letters of friendship and affirmation of the school's desire to help and cooperate should also be sent out. A medical school should let the people of its state know that it exists. An alumni organization should be set up with the school as the center and pivotal point. This medical school of which we speak should not belong to the men in the city in which the school is located—rather it should attempt to make the people of the state feel that it belongs to them and to the physicians throughout the state. In order that a strong alumni organization may be obtained, the graduate must have a feeling of loyalty and friendship to the school from which he graduates. He must not leave the school feeling that while he was enrolled in the institution he was a necessary evil—that he was being initiated rather than educated.

To go from the general to the particular, let us suggest methods by which this student may be made to feel that he is being educated rather than that he is undergoing certain ordeals and humiliations that are required to be borne for admission to the medical profession. These suggestions, we must all remember, are being made for the medical school abstract—not for a medical school in particular.

Now, for the moment let us turn our attention to the raw material that is to become the medical student in that school which we are discussing. We believe that this student should be required to have three years of premedical education before he is allowed entrance to the medical school—and he should be encouraged to stay in premedical school for four academic years and to obtain a Bachelor's degree. He should be equipped with a knoweldge of the humanities. The practice of medicine is not an exact science—it is an art that is practiced on one's fellow men. The student should come to medical school with an understanding of the philosophies of man, of his psychology, of the economic laws that govern the world in which he lives. We feel that this information will aid the future physician in understanding the men on whom he is to practice, as well as to make the physician himself a well-rounded individual and perhaps a happier man.

Still, the premedical college should not teach the student courses that are to be repeated in medical training. There is one exception—embryology. Embryology should be taught in the college, then it could very well be repeated in the first trimester of the medical course. However, if the idea could be obtained, embryology taught in medical school could be more streamlined and merely the important medical points emphasized.

Another science that should be especially emphasized in the college preparing the student for medicine is chemistry. Preparatory training in chemistry should include quantitative analysis as well as organic chemistry. Then in medical school the student should be capable of going immediately into the study of pure biological chemistry with no time wasted on a restatement of the fundamentals which he should already have mastered.

The medical school should cooperate closely with the premedical schools. The premedical institution should be told what is to be required of it and of its graduates. If the premedical school cannot meet these requirements, its graduates should not be accepted for entrance to the medical school.

We are of the opinion that there should be a de-emphasization of the sciences alone as requirements for entrance to the school of medicine. Instead there should be more weight placed on the individual's character.

Let us talk of the attitude of the medical school toward this raw material with which it is to create a physician. In the first place, the school should honestly feel that it intends to make a physician of each student who is permitted to enter the institution. We have no sympathy with a policy of permitting 85 men to enter a class with the intention of finishing 60. This is a policy of waste —the tax payers should not be required to countenance it. Assuming that a

medical school had an enrollment of 250 students and a yearly appropriation of one half million dollars, it is not difficult to compute that $2,000 per year per man is spent and when 20 of the students are discharged, the state has suffered a loss of forty thousand dollars. Apparently there is something inadequate in the material chosen or there is a fault in the method of selection. We suggest that if sixty physicians are to be produced per year in a medical school, 60 or 65 students should be chosen carefully so that 20 or so men need not be weeded out. Careful scrutiny of records plus ascertainment of the neophyte's character, plus requirement of three or four years premedical training would make the selection of successful students much simpler. If the student's premedical scholastic record was acceptable there is no reason why he could not master the medical training. However, there is one ground on which we believe a student should be dismissed—if a student's character should be proved to be at fault, he should be dismissed immediately, provided the heads of the departments are agreed.

Now that the student has been accepted, let us look into the life he is to lead in a medical school. We mentioned before that the student must be educated rather than initiated. There are a number of suggestions that might be made to a medical school that sincerely desired to educate its students.

Perhaps we should consider primarily, in a superficial manner, methods of education. In the United States the accepted method is lecture, laboratory and examination. Perhaps this method is best—but good or bad, it is the recognized approach or system. Our suggestions for a medical school will be limited to these three means of imparting information. We think that the lecture should be well organized. Presuming that a man has taught a subject for a number of years, he has little excuse for not having the information that he intends to teach well organized, at his mental finger-tips, and worded in such a manner that the student can understand and retain. Too, the teacher must realize that he is lecturing to the students and not to the other faculty members who may be visiting his class room. He should attempt to make the material simple, easy to understand and yet make it interesting enough so that the student would be inspired to read further on the subject. He should not permit himself the conceit of performing mental gymnastics so that he might impress other faculty members. In doing this, vague experimental work is often described and the fundamentals are neglected. We feel that the colleague the professor might be trying to impress is, in reality, listening to those intellectual fireworks with only one ear while with his mind he is thinking of the thrilling mental gymnastics which he himself will incorporate into his next lecture. We are positive that the student is listening with neither ear and if he is thinking at all it is to wonder where he will learn the material that is supposed to be under discussion.

A word or so for the laboratories—in this ideal school that we are discussing there would be laboratory guides that would be guides and not recipes. The student would be expected to know what he is doing at all times in the laboratory. A certain amount of work should be prescribed—an amount to follow a schedule. If a student could finish that work in one hour or in three hours he

should be permitted to leave when the work is at an end and completed to his satisfaction. Remember the medical student is entering maturity, is a product of 3 or 4 years of previous higher educative training, he is or should be a man, a person of good character and if he is worthwhile at all, he is impressed each day with the fact that he has entered a highly serviceable professional training. There is no need to treat him as if he were in kindergarten. He will only react to such consideration as if he were a kindergarten child. Sometimes the student will become interested in some particular problem and for just such as this the laboratory should be open at all times and he should be made to feel welcome there.

Quizzes, of course, are a subject that is very dear to the heart of the average faculty member and are ordeals that the student has learned to face with dread. You know, as well as we, that too much emphasis is placed on the written examination and in most cases the exams are not at all a determination of the student's progress; which should be their design. If the average class in a medical school was made up of sixty students and if a school had the required finances to obtain a sufficient number of men on a faculty there would be no reason why the teachers could not through personal contact, have a fair idea as to whether or not the student was learning the material.

Too many quizzes in some schools tend to make the student study insignificant details and old quizzes, not the subject as a whole. The student might be afraid to study the subject as a subject for fear that some detail might be missed. Too many examinations tend to make the student insecure; he looks for catch questions, double meanings, etc. In later study the student might discover that certain points that took on such importance in quizzes, points he was required to learn in detail, were only important in that they had to be learned to pass one particular examination. Examinations in a medical school should be an effort to emphasize important points of the course under study rather than a contest in which the cleverness of the professor is pitted against the ingenuity of the student. Let them be a means of teaching, not an expedient for coercion or dismissal of the student.

In some medical schools there is much despair on the part of the student when he leaves the so-called preclinical studies to enter upon the clinical work. He finds that many things that were taught in the first two years were evidently of little importance since the men in the clinical years know so little of these things. This feeling that so much that is learned has no importance may or may not be true. However, in this ideal school of which we are thinking, the clinical and preclinical men would do well to confer and discuss so that a greater emphasis might be placed on practical matters in the first two years, and so that the clinical men might renew their acquaintance with basic preclinical information that the physician should be expected to know.

We think it a good idea that when the student enters the first clinical year he should be given a mimeographed outline telling him exactly what is expected of him in the hospital. This is not spoon feeding, surely a man cannot be ex-

pected even to play a game unless he has seen the rules. Such a plan would give the student a feeling of security; he would save two or three weeks during which he learned mere routine by trial and error or from lambastings from orderlies on up.

We think the student in the hospital should know his patients in detail. Ward rounds should be held at least twice a week in every department, during which the student would be expected to know his patient in detail, diagnosis, treatment, etc. Though the student should be expected to answer many questions concerning the disease, the professor should remember at all times that the student has been exposed to little more than two years of medicine and is not a learned physician. Extreme decorum and courtesy should be maintained at all times.

In certain medical schools greater emphasis needs to be placed on physical diagnosis—the student should feel free to call to his assistance the extern, intern, resident or professor in a problem concerning the examination of his patient. Perhaps it is just as well to mention here that we think a student should be left with the impression that all those people who are entrusted with teaching responsibility are willing and happy to help him with any of his problems. Not only should the student be impressed, but the teachers must sincerely hold such an attitude. Physical diagnosis needs to be increased as a course in some schools. It needs to entail more hours of study and class work.

While traversing suggestions for an ideal medical school, let us consider hospitals that might be affiliated with such an institution. Next to a church, we know of no other place that should have a more sanctified atmosphere than a hospital. Kindness, pleasantness and a will to heal should abound. No one in the hospital should waste time or energy in being unpleasant or hostile. Everyone must realize that patients are not mere disease entities but are unfortunate human beings.

Nurses and attendants should be treated with respect and they should treat the student with respect. The institution is set here for the purpose of training physicians for this state and all should realize this. An unpleasant attitude by the student toward the hospital, clinic or school personnel should not be tolerated; conversely, an unpleasant attitude by nurses or like persons toward the student should be ample grounds for their dismissal. In the medical profession, if that profession is to maintain the high standard that it now enjoys, there should be maximum cooperation between physicians and nurses and among members of the profession. There is no better place for this ideal to be begun than in a training hospital.

The hospital associated with a medical school should be clean. There is no need to teach the student bacteriology and public health or sanitation and then expect him to work in a hospital that is not scrupulously clean; true, there are times when help is hard to get and in these times a hospital affiliated with a university can be expected to be no cleaner than the other hospitals in the locality, but it should be expected to be that clean.

Such a hospital should have one person at its head with complete responsibility and authority. This person should be clearly defined so students, nurses, attendants and faculty members may recognize him. That person should be the dean of the medical school.

In the outpatient clinic of the medical school of which we speak, there should be some person at the desk with sufficient understanding of medical matters to be able to correctly assign patients to the different clinics. Perhaps senior students might be assigned this duty, in an alternating manner.

Nearing the final parts of this discussion there may be mentioned the relationship that should exist between the students and the faculty in our ideal medical school. In the first place, when a student is pleasant to a professor, this professor should not retreat in horror, thinking that the student is attempting to pave the way toward seeking special privileges. We think that in a school no larger than the average medical school, a feeling of friendship between the professors and students should prevail.

The professor has a fuller knowledge of life that he could impart to the student if this closer feeling existed. Would not this be an admirable situation in which the finer points of medical ethics could be instilled into the student's mind? Speaking of medical ethics, is the physician to be expected to know medical ethics from having the Oath of Hippocrates read to him only once and that on the night of his graduation? In some medical schools there are men on the faculty who are authorities on subjects other than the field in which they work. Some may know a great amount about literature, others about music, and so on. Perhaps they might find students who are also interested in those subjects.

To conclude, we wish to make a statement concerning the responsibility and authority in this ideal medical school. We feel that the dean should be the absolute head of the school, clinic and hospital. If he chooses to appoint advisers, that should be his affair. We feel that he should have complete authority and responsibility and if members of the staff, faculty or hospital administration cannot cooperate they should remove themselves from the institution.

May we remind you again that the suggestions we have set forth this afternoon have been suggestions aimed at an abstract medical school existing only in theory? It may be that some persons at this meeting may assume that we have been speaking of them or of their province in this particular institution. This is not necessarily true. May we remind you of the noblewoman who had a phrase embroidered on her garter—"Honi soit qui mal y pense"—"Evil to him who evil thinks."

We stand ready, gentlemen, to discuss this address and to answer most any question that you may put to us. We would like for you to remember that we are (name of State deleted) people and have a sincere and deep-seated interest in this school and will always want to help make it a greater institution than it is at the present time.

Strictures on Some of the Defects and Infirmities of Intellectual and Moral Character in Students of Medicine

CHARLES D. ARING
Associate Professor of Neurology, University of Cincinnati College of Medicine
Director, Neurological Clinic, Cincinnati General Hospital
Cincinnati, Ohio

Nearly a century ago, Daniel Drake delivered one of his many prescient and brilliant addresses to the student body which would appear worth attempting transposition into harmony with these times. This effort at modernization of the admonitions of one of the Founders of American Medicine seems worth while now by way of a centennial progress note.

For those who have not had the privilege of association with the spirit of the great Drake, one of the noblest men in the hierarchy since Hippocrates, it might be noted that he was the originator of medicine and other cultures in the Ohio Valley. He founded what has become the University of Cincinnati College of Medicine practically single handed in 1819, at the age of 34. His contributions were by no means limited to medicine and his observations on many subjects, including among others, the weather, geology and botany, are landmarks in their respective fields.[1]

Daniel Drake stemmed from poor farming folk, who shortly after his birth moved from New Jersey to Kentucky. He began the study of medicine in Cincinnati under the preceptor system at the age of 15, eventually receiving his diploma from the University of Pennsylvania, the first medical diploma to be granted to a resident of Cincinnati.

His was a dynamic, irrepressible, enquiring, driving, sensitive personality. Like many of his nature, he required the warmth and understanding of female companionship, a point which he himself made, and to which I call attention since some may recognize in it the semblance of a psychological type and thereby better understand the man.

Drake, a peripatetic pedagogue in the medical schools located in Cincinnati and Northern Kentucky, was professor of pathology and the practice of medicine at the University of Louisville, when at the opening session on November 11, 1847, he delivered the introductory address,[2] the title of which I have appropriated. He separated students of medicine into categories according to intellectual and moral attainments, and admonished each group according to his consideration of its needs. The method retains appeal after the passing of a century, though we need no longer concern ourselves with some of Drake's groups, for example, those who would go into practice after a single course of lectures, or with the quarrelsome and warlike who might disrupt the serene fixation of the ideas of some classmate with physical uncouthness. We have become more subtle in our tortures since the pioneer days; though social expediency has once again expected us to kill freely, surely those within the guild are exempt from destroying others as well as each other.

It is interesting, nearly a hundred years after Drake's address, to consider again, for the moment, the intellectual and moral defects in the character of medical students, and to determine, if we are able, if the onus for these deficiencies rests where it evidently did in Drake's era.[3]

THE BRILLIANT STUDENT.—Drake addressed himself first, to the best among the student body, and I find no reason to alter his order now. Here I depart from his context to return to it occasionally since the times have rendered opportunities different for the undergraduate in medicine of our day.

The best students have the considered appreciation of the faculty, since they leaven the whole; in truth they are among the reasons why men teach or continue to teach and they are a stimulus for bettered instruction. They compensate us in a way that no accumulation of the world's goods could ever do.

The brilliant students have responsibilities beside pulling up the general average of the whole, a lesser function in the now prevalent "convoy system"[4] of higher education. More significantly it is from among them that we must look for recruits to continue the advance as well as the teaching of medicine, to say nothing of the management of an art which should convey to the healthy as well as to the sick, the benefits of an accrued knowledge. In a word, we recognize them now as our equals and confidently expect that eventually they will be our betters. Such is the order of things. Certain it is that they are to be carefully nurtured and in no way debased.

With Drake, I would admonish the majority of the student body not to assign themselves to membership in this favored group, but rather to rely on the less charged judgment of others for this or any classification. Drake urged the better student, as I now do, to be gracious about his gifts and to consider why he is among the chosen. To further this process and to assist toward maintenance of perspective, we might keep in mind the fact that man does not begin to attain wisdom until he recognizes that he is no longer indispensable. This realization tempers all things, good and bad.

GOOD MANNERS.—We proceed from the sublime to the mundane, still utilizing Drake's classification to the student who lacks punctuality and the ordinary manners which indicate contact with thoughtful and gracious people. Drake noted the indecorum of churlish conduct, and he said that medicine is a refined profession, and all students might therefore cultivate good manners. He thought punctuality might be placed on the higher ground, that medical learning is an orderly process and a student should not miss a single step.

Regretfully one cannot say that the times have outmoded Drake's remarks on manners. The banging doors and chairs, and the choreiform progress to a seat that is impelled by late coming in a crowded physical plant, is distracting and sometimes infuriating, if repetitious. Those who arrive at the appointed hour are entitled to a first rate demonstration, free of interruption and the reduction of quality that tardiness entails.

More than ungracious are the private discussions among student groups in the classroom which force the demonstrator to raise his voice above the under-

tone. To say the least this distraction is not conducive to an exhibition of the best that is in a teacher.

If lack of consideration for each other were not enough, the thoughtlessness of smoking in the presence of sick people is not to be condoned. To the sick person, whether or not he indulges, second hand tobacco smoke is more often than not nauseating. A frequent complaint of patients to nurses is about the odor of tobacco that envelops the physician, and attends him despite the exhibition of the suavest bedside manner. An infallible method of procedure in the presence of persons who are ill is to conduct one's self as though he were the patient. The same holds in the management of the private interview with the sick person. Usually one maintains a sympathetic, friendly sense of humor in the presence of the ill. Robert Walpole's formula of good sense, good manners, good humor, and good faith is a hard one to beat.

One would like to put the student on his own and allow him to attend those demonstrations that are worthwhile, and to obtain the substance of medicine in a manner that he sees fit. It seems reasonably clear that the American medical student is not yet ready to fit into the Oxford system. The ability to attend to such trivia as the sensibilities of patients and colleagues serves somewhat as an index of fitness in this case since it is an indication of what might be expected in more portentous situations.

USE OF ENGLISH.—Detouring Drake's classification for the nonce—I have had no experience with teaching outside of the medical field, but I am always amazed at the startling disadvantage of the American medical student with his own language. We have required that our students usually come to us with some knowledge of German or French to no advantage whatsoever as far as I am able to determine. I, for one, would be willing to forego the smatterings of foreign tongues for an adequate appreciation of English, which, of course, would not necessarily follow; as a matter of fact, it most likely would not.

Occasionally, I have had the incongruous feeling of dealing with a post-graduate illiterate on reviewing charts, discussions, or examinations written by students in the clinical years of medicine. It appears as though medical students consider that mild exposure to Greek and Latin confers on them a kind of poetic license, which allows neglect of English. Proper names (e. g., "The Babinski is negative" (sic)), and terms that are vaguely comprehended, are sprained to the bidding of a master whose word poverty indicates regimentation of thought. Verbs are avoided as though they were virulent. It seems safe to say that the non-medical vocabulary of a fair number of students was considerably richer in high school than it is in medical school.

Possibly, it follows that ineptness of the average physician in interpreting for the layman, and particularly for the press and the courts, has resulted in the propagation of some peculiar medical concepts, which, to say the least, have not been particularly beneficial.

Granted that in medicine there is a new language to be learned, the old should not be neglected since both are readily harmonized. In writing and speech,

medical students, and physicians for that matter, need desperately to avoid routine and stereotyped remarks, and to record or report in succinct English (and not in pseudo Greek or Latin) what is seen and heard, and sometimes, but not always, what is interpreted. A record of appearance, behavior and conversation, with the liberal use of verbatim remarks, is particularly lacking in case records. I would strongly urge on the student the possession and the use of a standard dictionary. I am not going to resist the temptation to recommend a smaller one which has stood me faithfully in good stead, Webster's Collegiate Dictionary, the largest abridgment of the New International Dictionary.

There is reason, more or less concealed, in my ranting. Sluggish and soporific habits of thought are restricting medical progress. As Sir Thomas Lewis[5] has noted, " . . . names applied to diseases come to assume the importance of specific entities, whereas they are for the most part no more than insecure and therefore temporary conceptions." As an example, a patient comes to the physician and in so many words tells him he has a skin eruption. Unfortunate finality seems to be approached in the minds of both when the patient, in turn, is told that he has a dermatitis. Is it not possible that a reasonable and sympathetic appreciation of English might aid to clarify medical thinking? I doubt if any of us will be able to find the physician who has not at some time translated the patient's complaint into Latin or Greek and by this largely reflex process precluded further consideration on the subject. Sir Thomas Lewis has said "Diagnosis is a system of more or less accurate guessing, in which the end-point achieved is a name." If one may use football parlance, I would admonish the student not to be "sucked-in" by this technique, regardless of how often he witnesses it. By the simple expedient of definition, sloppy habits of thought may be unmasked in him as well as in others.

PREMEDICAL PREPARATION.—In Doctor Drake's classification were those students who had entered medical school without proper preparation. The connotation for a century ago is obvious. For us the definition has changed, since entering with the scholastic preparation that has been prescribed, presumably they should be fit. We recognize such not to be the case.

Proper preparation sounds as though it were a thing of the student's past, but exactly because it is not, it is worth discussing. One may still prepare for the study of medicine, even though the formal academic career be completed.

In medical schools you may note, as an example, that the chemist would seem to think you should be intimately familiar with all the chemistry that may be offered in preparatory schools. In the light of this teacher's experience, which as Coleridge so aptly put it, "illumes only the track it has passed," the man who enters medical chemistry presumably ought to be able to dash off formulas as complicated as that of catsup or reasonable facsimiles thereof. Similarly the neurologist, to take an example with which I am more familiar, might expect the novitiate to recite the relations of the vagus nerve of the dog fish, or to chase an impulse as it long circuits about the complex ramifications of the vertebrate nervous system. Those of the faculty ensconced in their ivory towers seem to

feel themselves put upon, if the student arrives at their subject, which by the way is the most important in medicine, without thorough grounding in what they consider to be the preliminaries. Surely, it is important to have met the sciences, but to have become prostituted to them, as is so often the case, has not, I believe, produced the excellent physician that many think.

I am enunciating nothing new in pointing out at this time that the most obvious lack in medical education today is academic culture. Over the last half century or so, there has become established, particularly in this country, the idea that if one is to become a physician he ought to detach himself from too refined and intellectual pursuits at some time around pubescence and get down to business; business seemingly being traditionally American. He must strive to get ahead of the next fellow, and the means of doing it have been thought to reside in an overwhelming dose of high school and college science. The humanities are rather beside the point; time is short, the science long, therefore dispense with the false life and the frills, such as literature, which includes conversation and writing, philosophy, music and the like, which, for him, are so much superfluity. With the nose to the grindstone and with feet planted firmly beneath the ground, the course can be run in six or seven years, and one then arrives promptly and scientifically at the goal, which is, to be sure, the practice of medicine. A common notion about medicine seems to be that it is a system which must promptly return interest on the investment or be considered in a term of the market, cats and dogs. I am cognizant of financial stresses which envelop this angle of the problem.

One should not wonder, equipped as we are, that physicians are not particularly well prepared to handle the medical problems that most frequently arise. In truth, the training now in vogue obscures an already elusive symptomatology in many cases. The physician, by the time he has finished this training, has become so rigidly fixed in the "scientific pattern" that he is bemused when he learns that the complaints of the ailing citizenry have relatively little to do with science. In not a few instances he rarely gets together with patients on a common ground, a point about which he is not particularly cognizant. His usefulness is accordingly curtailed. This, I suppose, sounds absurd to some, but it is, nevertheless, true. A pertinent illustration has been offered by the present war, when, particularly during the earlier months and years but also now, those of us in the field of psychological medicine were at once appalled and chagrined to find that the line officer was better prepared to recognize psychological ills than was the medical officer. This rather astounding experience was repetitive, and has become commonplace. It is akin to an observation of Professor John Romano, who had a number of senior medical students and a like number of academic students individually gaze on a patient exhibiting the frank signs of advanced carcinoma of the head of the pancreas, and then asked them to describe what they had seen. The college students all poignantly described a dying woman. The medical students debated the serum bilirubin necessary for such jaundice and without exception were as detached from the immediate situation as if they had been expounding a chemical equation. Is it not possible that the trees have taken precedence over the forest?

One comes to the sobering realization that training which supposedly has been accenting science has in many instances not only left undeveloped the faculties which are most often of use in the job which most physicians are expected to do, but has succeeded in erecting a barrier between them and their clientele. One might be inclined to attribute some, but not all, of this rigidity to paucity of refinement of the mind, morals and taste. For this lack of culture, the medical student in most cases attempts to substitute learning by rote. Memorizing formulas, the insertion and origin of muscles, and a host of symptoms, signs and syndromes, it is thought will do the trick; will substitute for erudition and feeling, and maintain a position among the intellectually able.

Disillusion comes rather quickly to the honest man. As an intern it is soon learned that patients are talking about things contained not so often in textbooks of chemistry and pathology as in the ancient writings of the Greeks and Romans, and of Shakespeare. The poems of Robert Burns and the meditations of Marcus Aurelius contain some material rather pertinent to the practice of medicine.

In dealing actively with the sick as a practitioner of medicine, and with the well, and the latter will be a job of increasing importance, I shall venture the prediction that the physician will be able to use, so to speak, academic culture as much, if not more than what might be strictly but inaccurately referred to as medical knowledge. The newer statistics of symptoms and of disease will, I am sure, bear out this thought, though the correct incidence of medical ills in the broad population only now is gaining recognition with the impetus of war.

So I would like to place a bet on the student who comes to us with an interest, not particularly in his father's specialty, but an interest in something that has developed primarily within himself, usually in response to associating with a good teacher. I would agree with Gregg[4] that this is a revelation of excellence. Of course, the father of our student may have been that good teacher, but much is against it. The topics which have interested this favored student may have nothing to do with the subjects that have been considered requisite for a medical education. One has not the time to pursue the subject further; it may confidently be left with Mark Twain's quotation, "If your doctor knows only medicine, you may be sure he does not know even medicine."

MATURITY.—A word on maturity, a quality we value highly and which we as teachers can do little but foster, since naturally the student comes to us with or without the foundations of it. Matureness indicates a readiness for action or development, and an index of it is the ability to adjust to situations as they arise. Maturity in the student of medicine is a prime sign of health and an indication of what has occurred in the intimate circle of his family.

The chief problem or action in medical school is to build on maturity the development of a thoughtful, discriminating, and critical attitude, and an understanding of the causes and manifestations of disease. This is to be obtained by contact with teachers and with books.

To foster what maturity the student has, we hope to train and test habits

of thought, and not as Doctor Charles Wilson[6] has thoroughly deprecated, aid him to ". . . . collect and store a set of facts, as squirrels hoard the nuts on which they hibernate . . ." For us to teach facts, so-called, and for the student to learn only to store facts is not the essence of medical education. After such a course bankruptcy would soon ensue, as we would have educated the student so that he could not educate himself. Cutting the umbilical cord which binds the students to the school would leave them in a state akin to senility, since they would not be equipped to keep up with a rapidly changing profession.

It is our duty to lift from the student of medicine the crushing weight of factual material, the method by which some of us feel we are initiating him into the subtleties of medicine. It is hoped that we may develop in him a thoughtful and critical attitude by which he may continue to be a scholar of medicine, after he has ceased being a medical student.

PRECEPTORS.—The too trusting medical student is often overawed by his books and teachers. Unfortunately, both may be integrated so as to mislead him; in fact, they may be slovenly, inaccurate, or worse, dogmatic. He realizes with a modicum of consideration that all is not quality as far as concerns the information which he garners from his preceptors. He will learn that differences in points of view and opinion by members of the faculty are healthy and that their reasoned presentation stripped of emotions will stimulate rather than confuse.

About medical writings: there are overwhelmingly more bad or neutral books and articles than good ones. In fact, it is safe to say that good medical texts are rare. Many of them are germinated by a sales manager of one or another publishing house, and have arisen not on inspirational grounds, but rather in response to commercial demands on the publisher. For this reason, among others, the student of medicine should be urged not to suffer from chronic reverence for print. Absolutely anything may find its way into medical literature. The discrimination between true and false must rely on active, practicing criticism, and on a firm grasp on the rules of evidence (Sir Thomas Lewis[8]).

Admitted, one should not foster chronic reverence for print; how may the student judge the spoken word? Ethics, which have been sprained somewhat by medicine to include the protection of the weak by the strong, would proceed as though all the actions of all physicians are guided by a higher power, and that they, possibly together with the clergy, should not be judged according to the criteria applied to other human beings. Decorum and the desire to remain healthy dictate that I tread gently here, but I do not think it should bring lightning down about my ears to note that teachers of medicine, like olives, might be graded as colossal, large, jumbo and medium. Their sorting should not be too difficult for most students—who would, I am sure, be careful of weighting their judgment of an olive too heavily on its outer surface. He might attend the prophet without honor in his own bailiwick, but who is well considered away from it, and look askance of the rigid specialist who has limited his horizon by the expediency of denying that anything exists beyond his range of vision.

In geography such a course might be termed pre-Columbian; in medicine it labels just as clearly the late 15th century mind.

The student should beware of him who considers all others out of step but himself. It is possible that he is, as he thinks, another Pasteur, but it is not too likely. His accomplishments are a matter of public record for perusal, and the record is accessible even to novitiates.

At this point I would like to commune with students in their final year of medicine and especially with their class officers. I have always thought that suggestions for such improvement in instruction as might be instituted in medical schools, particularly without change of curriculum, could in most instances best be brought in by the student body. Faculty councils are much too addicted to routinism to consider reasonably the trials of poorly taught students.

As a beginning it might be considered by the graduating class of medicine whether each member would be willing anonymously to assign a single grade without qualification to each and every instructor he has met during his career in medical school.* The system of grading might be one that is intensely familiar to him; that that is in vouge in his own school and with which he himself has so long been rated.

The graduating student would be urged to refrain from emotionalism as far as it is possible, and to consider coolly the instructor from the standpoints of his content of information and ability to dispense it, and to instigate within the student trains of thought and action. A consideration would be the degree with which the student thought an instructor able to identify with the student and his problems.

Under no circumstances would this system be considered to be punitive. It would be representative of the good will of the departing student who is now a physician, toward his college, and an index of his desire to do what he could to improve it.

The Dean of the school would be exempt from such evaluation and accordingly might more judiciously collate the data and present it to faculty council for consideration and action.

SPECIALISM.—The student should restrain those yearnings for specialization which make him relatively oblivious of the broad horizons of medicine. The tendency toward specialism in the student, which, unfortunately, is not infrequent, usually indicates that he has a relative who is a physician. Since father or uncle is a proctologist in Upper Mucous Falls, Nirvana—for our student—is confined to the rectum, and only to the rectum in that part of the country which had the honor to bear him. Accordingly, such esoterica as historical medicine, preventive medicine, hematology, and the like, are beside the point, as are the conditions of medicine pertaining in Mississippi and New York. We know that the student in this category is prone to simulation, and we hope that the faculty is not furnishing the example.

* It seems unlikely that some such method of evaluation of faculty has not been used in some graduate school.

Drake commented on this failing as follows: ". . . . you are to sit down side by side, and listen to lectures, which by their very adaptation to the tastes of some, will be unimpressive to others, while, in reference to the whole, they may fail to prove useful in consequence of infirmities and defects in yourselves, which you should, if possible, correct at the very beginning of the session."

Drake's remedy for the student altogether intent on practical matters (he mentioned in particular those striving quickly to be operative surgeons) was two-fold and mutually exclusive. He said, "Seek to find a reason for all you undertake, and in proportion to its correctness will be your success in practice," and "Seek some other employment, and when you have found one in which mental indolence is no obstacle to success, you will not disappoint your destiny."

PRIVILEGES AND RESPONSIBILITIES.—Drake's groups of the intellectually unequipped, the dissipators, and the social butterflies, among others, will be passed, to point to a considerable defect in the understanding of medical students and physicians about the privileges of the medical degree, and some of the responsibilities engendered thereby.

When one considers the enormous range of activities that have been crowded under a medical degree I am constrained from turning away any intelligent person, who might want to study medicine, regardless of his talents and interests. I know of no degree which at once seems to fit persons for such diverse activity. Seemingly not only does it allow for the treatment of the ill, but qualifies one as a teacher, an author, an administrator, or an investigator. There were seven physicians in the 78th U. S. Congress. The fact that the physician is always essential in war or peace lends status in the hierarchy of occupations.

Medicine opens to one a host of specialties, which range from duties concerning the terrain and watershed, on one hand, to the relief of ingrown toe nails on the other (sic).

In 1937, the *Lancet*[3] commented on the phenomenon as follows: "But today opinion of doctors is invited, both individually and collectively, on many matters, outside a court of law which are of national, social and political importance. An enumeration of such subjects would include malnutrition, population, birthrate, birth control, noise, tests for drunkenness, road accidents, the campaign for physical fitness, corporal punishment, euthanasia, war, and peace, and many another problem even when specific questions of health are excluded."

We are quite cognizant that none of us are the experts in human affairs that the layman would have us be, though it behooves us to foster the trust which engenders such lavish confidence, no more for our own welfare than for the welfare of the ill. Possibly, we can work toward it by the exertion of a proper industry, particularly as students, so that intellectual and moral activity might become with us as a second nature. The student should not be allowed to fall into the pattern that he is existing at some subhuman level, as long as he is actively engaged in the study and not in the practice of medicine. It should be evident that much study is required to be able to accept the responsibilities as

well as the privileges of medicine. The student is in the enviable position of eventually seeing further than his teachers; he should exploit his position to the fullest and enjoy it.

It is fitting to draw toward a close with Drake's words[1] on the necessity and value of professional industry, "If a provident temper of mind make you desirous of guarding against the gloomy insignificance—the sad and solitary nothingness of an ignorant old age, you must accomplish it by industry in youth; industry is peculiarly appropriate to this object, since, in our declining years, the knowledge acquired in early life is almost all that remains with us. The first inscriptions on the tablet of the mind are the last to be effaced. What a resistless motive for early diligence is suggested by this important law of human nature; and from its frequent violation, how few, like Nestor in the Iliad, become in old age the living oracles of wisdom to the rising generation."

CONCLUSION

It does not seem profitable to pursue further Drake's strictures on the defects and infirmities of intellectual and moral character in students of medicine, for it becomes increasingly clear that the more one delves into them the stronger becomes the impression that within a century the onus for them has largely passed from the student to the faculty. If the brilliant student is repressed to the average level by the convoy system, who is responsible for it? Does not the faculty set the tone for the quality of behavior, and usually receive what it demands in this respect?

After all, the usual student may have no better standard of reference than the proctologist uncle in Upper Mucous Falls, and his progress in college and medical school may not remedy this since it brings him in contact with too many quite similar figures, perhaps more cosmopolitan, but otherwise little different.

The premedical curriculum is frozen rather rigidly; it is a brave student who flies in the face of requirements and delves more deeply in the humanities; without comparative anatomy 106 he may not get into medical school. Similarly in medical school, the established curriculum drags along many an unwilling and protesting student, who sees no sense to much of it, but hangs onto a thread of hope that those responsible know what they are doing. Indeed, too much of the curriculum falls into the category of the old fashioned purge therapy, "castor oil tastes terrible but it's good for you." It is little wonder that some students, who had approached reasonable matureness in college, regress in medical school (as they surely do, for example, in the handling of their own language), where often they are treated in an even more infantile manner, both intellectually and socially.

The determination of the attitudes of many students must rest somewhat on the shortsightedness of medicine as regards its position in society. If physicians with whom the student is best acquainted "know only medicine," in the sense of Mark Twain, in the same sense they can hardly be expected to realize the relationship of the profession to other human endeavor. This is to be depre-

cated never more vigorously than as it warps and restricts the young for action in an era, when the progenitor and perpetuator is for most purposes happily forgotten.

One wonders what the great Drake would have thought at the turn of events over a century, where the student who had usually been held entirely responsible for his infirmities had become more or less blameless in the matter. It is possible that he, like so many of us, would have been satisfied with medical progress as it is, rationalizing that it could have been no better since we did it. But I prefer to believe it the better guess that this dynamic, enquiring, and sensitive genius would have been berating his colleagues, just as history so reliably informs us that he did, over a hundred years ago.

However, it should not be lost sight of that in the particular presentation here discussed, Drake was stricturing students of medicine and not their preceptors. It is well within the experience of all schools that no matter how excellent the quality of teaching, there is ever with us the ineffectual student, who for any of a number of reasons is resistant to instruction.

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Teaching Industrial Hygiene in the Department of Public Health and Preventive Medicine*

DWIGHT O'HARA
Professor of Preventive Medicine, Tufts College Medical School
Boston, Massachusetts

The title suggests that the teaching of industrial medicine belongs in the department of preventive medicine, or, at least, that I am to marshal the arguments in favor of such a relationship. This I am not prepared to do, though I have no doubt that there are many situations in which industrial medicine may appropriately be delegated to departments of preventive medicine, and, of course, the American Medical Association's section on *"Preventive and Industrial Medicine and Public Health"* embodies the same association. To confine industrial medicine to the department of preventive medicine, however, would tend to alienate other important and useful elements of the medical faculty. I would like to outline briefly our attempts to develop instruction in industrial medicine at Tufts. The last few years of unprecedented industrial activity have so emphasized its influence on health that our experience at Tufts may roughly parallel that in many of the medical schools.

About twelve years ago we recognized industrial medicine by devoting a whole lecture to it! This lecture happened to be given in the preventive medicine course, but it might as well have been given in any other course. At that time its weakness seemed to be not so much the limitation of a single hour, as it was the limitation of a single lecturer! We selected a different speaker each year from among the physicians whom we knew to be employed in industry. I recall one lecturing about silicosis for the quite natural reason that it was the only industrial disease he had encountered in his plant. Another year we had a speaker who covered the pitch cancers of the optical industry, and, again, one who was primarily interested in the benzol poisoning of the rubber products workers. It was funny; we knew how inadequate it was, but we did not know what to do about it.

We first began to expand our outlook in 1936, when we were able to secure Dr. Alice Hamilton for a series of four lectures; these were on the environmental factors in industry, the metallic poisons, the asphyxiants and the volatile solvents. This was a systematic, if short, presentation of industrial toxicology. We have since added two more lectures, in which is outlined the work performed by the staff of the Division of Occupational Hygiene of the Massachusetts State Department of Labor and Industries. This is as far as we have gone in our course in preventive medicine, and it may be as far as we shall go. But, of course, industrial medicine extends itself much further, and I am sure that if we all look around we will find not only that further interest in it is neces-

* Read at the Second Annual Conference of Professors of Preventive Medicine, October 2, 1944.

sary, but that it is already being expressed at many other points in our medical school curricula.

We found, for example, that while these six industrial lectures were being established in the preventive medicine course, other departments were likewise developing their own aspects of the subject. The Department of Dermatology had devoted a section of its instruction to the industrial dermatoses; the Department of Chemistry had shown an interest in some of the materials responsible for industrial poisoning; the Professor of Gynecology had been lecturing on the relations between industrial employment of women and menstruation and pregnancy; the Department of Medicine had inserted into its didactic program two lectures by the chairman of the Massachusetts Industrial Accident Board, and two more by the medical director of a large ship building plant.

Some of us who are regularly engaged in bedside teaching have now begun to emphasize the occupational aspects of differential diagnosis, and we are surprised to find how few patients appear on the hospital wards in whom the occupational factors cannot be made to be pertinent to the usual clinical discussion of the case. There are, for example, the industrial aspects of the pulmonary diseases, such as tuberculosis, pneumonia and bronchiectasis which can legitimately be expounded whenever these cases are encountered. The industrial environment likewise offers boundless opportunity to those who are currently affecting the psychosomatic phraseology. So altogether, and without much conscious effort, there is already infiltrating into the framework of the existing curriculum a substantial interest in industrial hygiene.

Our present purpose is to guide and amplify this interest. To this end we have appointed an industrial hygienist as Professor of Industrial Hygiene, on a part time basis. He is not a physician, nor a chemist, nor an engineer, but he is familiar with the skills that these groups are contributing to industrial health, and he is also aware of the practical obstacles in their paths which may be raised, as well as the aid that can be extended, by labor and management. Although his rank is that of a clinical professor, he has a committee to work with instead of a department. The present members of this committee were selected from departments which had already shown their interest, providing thereby a chemist, a dermatologist, a surgeon and two internists. Whether this is going to supply the best approach to the teaching of industrial hygiene we cannot say. What we can say at the present time is that it places the actual teaching in the hands of those who are most enthusiastic about it.

Whatever the approach to the teaching of industrial hygiene is going to be, we should try to visualize our students as prospective practitioners in industry; as such we shall see men who are more like the general practitioner than the medical specialists whom we know today. Industrial health is safeguarded not only by medical controls but also by engineering, chemical and sanitary controls as well. The industrial physician is a member of a team rather than an individual expert; he is the doctor on the team and is expected to represent the whole profession of medicine, not a single specialty. He may consult with other medical

specialists, as the general practitioner may, but he should be all things to all men most of the time, making the same sort of decisions for the individual employee that the general practitioner does for his private patient. What his particular problems are will depend on what industry he works for. More than one-half of the diseases and disease prevention in industry at the present time are said to be dermatological, but there are many industries in which dermatitis never appears. One quarter may be pulmonary diseases, some of which are very serious and constitute, perhaps, the gravest hazards of modern industry. In the remainder appear gynecological, nutritional, recreational and other problems for the solution of which the doctor must have broad intent and vision rather than confine himself to special interests. In other words, the man or woman who is sick at his work presents the same problems, from the doctor's point of view, as the man or woman who is sick at home.

The medical school curriculum is like a garden. It provides a certain amount of space and a certain richness of soil, whereon must be raised certain staple crops. The different varieties may be isolated into their own plots within the garden; that is the orthodox technique and the easy thing to do when you have plenty of land, tools and manure. There is another technique however—that of planting between the rows—it is more difficult; it requires more planning, but with limited resources it yields a greater harvest. If you want your tomato plants to do well, you will put them where they will get the most sunlight and moisture; so you should place teaching responsibility where it will get the most interest and enthusiasm,—that is what will make it grow. If the interest and enthusiasm for industrial hygiene is centered in the department of public health and preventive medicine, that is the place to put it. I think it will be an unusual medical faculty, however, in which the interest is not more widespread, so much more widespread that it will be difficult to keep it out of several departments. We feel that we would be missing a good deal if we tried to confine industrial medicine to any one department—or even to a department of its own—for it does not seem to be that kind of a subject.

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The Pittsburgh Meeting

Word has just been received from Washington that the meeting in Pittsburgh will be held October 29, 30 and 31, 1945. The headquarters will be the William Penn Hotel. Reservations should be made early.

The program for the meeting is virtually completed. Copies will be sent out as soon as it is printed. The Executive Council will meet October 26 and 27—Friday and Saturday. The Liaison Committee will meet Saturday evening, October 27. The Council on Medical Education and Hospitals had decided to meet in Pittsburgh, Sunday, October 28, thus giving opportunity for the discussion by this Association and the Council of problems of mutual interest and to reach like decisions if decisions must be made.

The Executive session of the Association will be held Tuesday afternoon at 4 o'clock and will continue, with an intermission of one hour and a following dinner, until deliberations are concluded.

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Residents and Interns from Foreign Countries

Dr. E. M. MacEwen, chairman of the Executive Council, has had considerable correspondence with the Department of Justice with reference to the appointment of graduates of foreign countries as interns and residents in our hospitals.

Because of the war conditions, the Department of Justice has concluded that aliens who are graduates of medicine, qualified for appointments as interns or resident physicians, may be admitted as temporary visitors to accept such appointments during the continuing shortage of such physicians in American hospitals. This policy will also be followed with respect to applications for extensions of stay submitted by interns and resident physicians who have been admitted into this country as visitors.

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Release of Medical Officers

The machinery for the release of medical officers who have been declared as being essential by medical schools is in operation. Not all the men listed will be released, but it is likely that more than one-half the total number will be released some time during the next sixty days. Some schools will fare better than others because their men are stationed in the United States or have returned from foreign service or are not so essential to the service. If they are essential to the service, there is very little chance that they will be released no matter how many points they have or what their age is. If needed, they will be retained. At any rate, it is gratifying that release is in progress.

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Supply of Medical Students and Physicians

Memorandum presented on June 4, 1945, to President Harry S. Truman by a special committee of the Committee on Postwar Medical Service consisting of Evarts Graham, M.D., St. Louis; Victor Johnson, M.D., Chicago; Harvey Stone, M.D., Baltimore, and Fred C. Zapffe, M.D., Chicago.

Whatever measures may be taken in the near future for the improvement of the health of this nation, including the construction of additional hospital facilities and the extension of various plans of prepayment insurance against sickness, it would seem to be axiomatic that phy-

sicians must be provided in adequate numbers if these measures are to succeed. Yet we are now failing to provide for the training of enough physicians to meet the demands for doctors which we know will increase after the war.

At that time we shall need about 30,000 more physicians than before the war, primarily because of the requirements of the Veterans Administration (about 15,000) but also because of the needs of the peacetime Navy (about 5,000) and the Army plus possibly a compulsory universal military training program (about 10,000). This estimate disregards extra physicians required to provide replacements for casualties among medical officers, medical assistance to liberated countries and the more complete and extensive medical care demanded in this country.

Even if admissions, enrollments and graduations from our medical schools should continue at the present wartime levels, only about half of this need would be met, since 40,000 students will receive the M.D. degree in the period 1942 to 1948 and 24,000 physicians will have died during that time. Thus, under the most favorable conditions only about 16,000 additional physicians will be available after the war to do the work of 30,000.

In spite of this, freshmen enrollments in the medical schools of this country will be drastically reduced within the next year. In the past year virtually no able bodied males have been permitted to commence the two year course of college premedical studies because the Army and Navy have ceased assigning men to such studies and the Selective Service System has discontinued deferments of premedical students. In the past few years each freshman class of about 6,000 students included 4,000 to 5,000 able bodied men. These are no longer available under existing regulations.

From now until some time after the war, medical schools must enroll their freshmen from the following limited groups: women, physically disqualified males, men under or over the draft age and veterans. Relatively small numbers are available in these categories: medical schools annually receive applications from only 800 to 900 women and even fewer physically disqualified males; men under 18 or over the draft age can be disregarded, since there is only a handful of such students enrolled in medical studies. These three categories would scarcely supply 1,200 to 1,500 entering freshmen for the medical school classes of early 1946, even if all who applied to medical schools were admitted, with complete disregard for the qualifications of the applicants for the study and practice of medicine.

Major Gen. Lewis B. Hershey, the director of the Selective Service System, has stated that several hundred, or even a few thousand, acceptable medical applicants should surely be forthcoming from the hundreds of thousands of veterans being discharged from the armed forces. Checking on this statement indicates that it is a belief without foundation in fact. Eight large universities (California, Chicago, Illinois, Iowa, Michigan, Minnesota, Northwestern and Wisconsin), which normally supply 800 to 900 of the entering freshmen in our medical schools, now have enrolled just 42 veterans in premedical studies who will complete their preparation for entrance into medical school before 1947. Only 28 of these were considered probably acceptable as medical students and physicians. Generalizing from these data, it would seem that veterans may be expected to provide less than 4 per cent of the freshman class before 1947, totaling perhaps 200 to 300 students as compared with the total of 6,000 normally admitted.

Within the next year medical school freshmen admissions will be reduced by about 5,000 because of the existing policies and there will be an equal reduction in M.D. graduates three years hence. To write off 5,000 physicians is equivalent to depriving medical care from 100,000 hospitalized veterans, 1,000,000 soldiers or sailors or 4,000,000 civilians. Passage of even the best of the scores of medical care and hospitalization bills

now pending in Congress and state legislatures would be ineffective and meaningless if we simultaneously prohibit the training of sufficient doctors.

This deficiency can be corrected under the present Selective Service Act as follows: Defer qualified men now in college premedical studies when they reach 18 and defer 8,000 selected high school graduates of this year to commence college studies in premedicine. From these, 4,500 should be earmarked for admission to specific medical schools a year later. Repetition of this procedure each year the war lasts would effect the training of enough doctors to care for the health of the people. Consideration might also be given to the assignment of a limited number of men now under arms back to premedical studies, provided they pursue such studies satisfactorily before induction, as far as this may be consistent with military necessity.

It is of basic importance to note that the restrictive regulations now in effect were promulgated a year ago. Since that time the war situation has radically changed. Even though we still have a tremendous task ahead, requiring the mobilization of all necessary resources, it remains true that the Selective Service System has recently announced a reduction in the rate of induction of men into the armed forces by 30,000 per month starting in July. It is not apparent that the deferment of a small percentage of this number of premedical students would in any way affect the military situation. On the other hand, it would help to insure adequate medical care of civilians, including veterans, after the war.

The acute need for an appropriate adjustment is underscored by the realization that the present policies will result in the same drastic reduction in medical school enrollments for each year that the Asiatic war lasts. It will even continue for a period after the peace, since premedical studies require two years before a student is ready to enter a medical school. The necessity for a continuous flow of students into and through our medical schools has been urged by the Surgeons General of the three armed services, by Mr. Paul McNutt of the War Manpower Commission, by Dr. Frank Lahey, chairman of the Directing Board of the Procurement and Assignment Service for Physicians, by every medical school in the country with a single exception and by virtually all medical educators and leaders in the medical profession. This conviction does not represent a special interest or problem of the medical profession or the medical schools. Actually, most medical schools would welcome an enforced period of relaxation from their arduous wartime program involving increased enrollments and acceleration of the training. The proposed adjustments are dictated only by the necessity for preserving the health of the nation.

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University of Puerto Rico
School of Medicine

The Superior Educational Council of Puerto Rico plans to open a school of medicine in the University of Puerto Rico at the "earliest possible date" in order to help relieve the acute shortage of doctors in the island. There is now only one physician to every 4,000 inhabitants.

Pending the development of the School of Medicine, the Superior Educational Council and the University have established a six-year scholarship program, for training of doctors in continental medical schools, including some postgraduate students. The recipient of each scholarship would obligate himself to work for the university or the public health service of the island for a period equivalent to the number of years during which he received the scholarship allowances. The recipient could be exempted from this service only by repayment of the principal and interest of the sums expended upon his education by the people of Puerto Rico.

This scholarship program is planned to begin during the academic year 1945-1946, and qualified applicants, with premedical training and some with degrees of bachelor of arts or bachelor of science

have been selected by the university. The University of Puerto Rico is therefore asking the medical schools to accept fifty such students, not more than one or two in any college. Next year, another fifty will be added to the program, and so on until the fourth year. The maximum number at any one time would be 200, in the fourth year; and would diminish after that as successive classes graduate.

Plans for the medical school include: Erection and equipment of an adequate building; provision of a modern hospital, as a branch of the school, with at least 300 beds and probably with 600 beds, and with sufficient and attractive living quarters for resident doctors and interns; selection and preparation of the faculty and the necessary technical personnel; a modern, well staffed school of nursing, already being organized with the cooperation of the United States Public Health Service.

Recognizing fully the magnitude of this enterprise, as well as of its exceptional importance both for the protection of the health of Puerto Ricans and for the greater development of medical science in the island, the Superior Educational Council, with the cooperation of the university and the Legislature, established the current scholarship program in the conviction that unavoidable delays in providing first rate education of doctors in Puerto Rico should not further deprive the people of the island of better and more nearly adequate medical care.

Medical schools willing to accept these scholars should notify the Secretary of the Association of American Medical Colleges.

* *

The Army and Navy Educational Programs

At this writing, plans are being considered for terminating the V-12 and the AST programs. Nothing definite has been planned, except that these programs will be terminated as soon as it is possible to make a satisfactory conclusion. Students from both the Army and the Navy will be entered in contracting medical schools this Fall, but it is possible that all Navy students may be released from service at the end of one semester or trimester. If that is done, they may continue in service and be withdrawn from medical school or they may continue their medical studies in a civilian status. The Army may do likewise. As soon as definite information is received as to the action to be taken by the Army and the Navy, medical schools will be advised promptly.

* *

The 9-9-9 Program

Steps have been taken to ascertain the possibility of discontinuing the 9-9-9 program. Discontinuance of the Army and Navy programs will, probably, make it possible to return to the former service periods for interns and residents. The office of the Association is keeping in close touch with all developments arising from the ending of the war. It is hoped that medical schools can return to prewar operation by next March.

WANTED: A DEAN

Experienced and well qualified, for medical college situated in large city in East. Good salary. Give full details in your reply. Answers will be treated as confidential. Reply to Box 20-5, Journal of the Association of American Medical Colleges, 5 So. Wabash Avenue, Chicago 3, Illinois.

College News

University of Illinois
College of Medicine

The following plan for postgraduate work for returning medical officers has been worked out.

Plan for a Three Months Basic Course in General Medicine: (Course to begin when at least fifteen students have registered.) This course is planned primarily for general practitioners, especially those who intend to practice in non-metropolitan areas, small communities and rural districts. The course will include didactic, clinical and fundamental instruction in general internal medicine, pediatrics, obstetrics, surgical diagnosis, radiology, therapeutics and chemotherapy, preventive medicine, industrial medicine and public health. A practical review of the fundamentals in the fields of growth and development, anatomy, bacteriology and immunology, hematology and tropical medicine, pathology, clinical physiology and laboratory diagnosis. Some instruciton in the less specialized aspects of neurology, psychiatry, ophthalmology, otolaryngology, dermatology, cardiology, allergy, and gastroenterology as applied to the needs of the general practitioner will be given. In addition to conferences, outpatient department and ward clinics, there will be two luncheon seminars of two hours duration each week at which time a panel of teachers will be available for informal discussions to determine particularly the specific needs and capacities of individual students; information gained in this way will be used by the teaching staff to stimulate improvement in all phases of the course work.

The course will be sufficiently flexible to permit students to register at the beginning of any month of the three months period. Registration will be limited to a maximum of 40. Veteran medical officers will be given preference, but civilian physicians are eligible. The tuition fee will be $75 for residents of Illinois, $100 for nonresidents.

Advanced Study in Special Clinical Fields.—For applicants whose previous training indicates qualification for study in special fields and who are not undertaking further residency training, a limited number of opportunities for such students will be available in pediatrics, obstetrics, internal medicine, surgical diagnosis, psychiatry, orthopedics and ophthalmology. Such training opportunities will be worked out on an individual basis by the departments concerned and will usually take the form of voluntary supervised assistantships in the outpatient departments and wards. Fees will vary according to course but will not be in excess of $75 for residents of Illinois for each three months of full time study, and not in excess of $100 for nonresidents.

Opportunities in the Fundamental Basic Science Fields.—Graduate courses in anatomy, bacteriology, biological chemistry, pathology, physiology, pharmacology and therapeutics as a foundation for later residency training are offered.

Residencies.—Residencies in the several clinical specialty fields are offered in the Research and Educational Hospital of the University of Illinois including the Illinois Neuropsychiatric Institute, and the Surgical Institute for Children, and the Illinois Eye and Ear Infirmary. Residencies are also offered at Presbyterian Hospital in the Rush-Presbyterian Division of the College of Medicine. Residencies in pathology are offered at the Research and Educational Hospital and at Presbyterian Hospital. The total number of first, second, and third year appointments in all specialties in this program under University direction is forty-six. The fields included are anesthesiology, general surgery, internal medicine, dermatology, pathology, oto-

laryngology, ophthalmology, pediatrics, orthopedics, obstetrics and gynecology, radiology, neurology, neurosurgery, psychiatry and urology.

Fellowships.—A limited number of Research Fellowships are available in basic medical science and clinical specialty fields for superior students. Such appointments carry a stipend of $1,200 annually.

The postgraduate course phases of this program are financed in large part through the generosity of the W. K. Kellogg Foundation.

To apply for residencies, address the Superintendent of the Hospital concerned, 1853 W. Polk Street, Chicago 12, Illinois. To apply for postgraduate courses and fellowships, address the Dean, University of Illinois College of Medicine, 1853 W. Polk Street, Chicago 12, Illinois.

Carl C. Pfeiffer, Ph.D., has been appointed professor and head of the Department of Pharmacology, Materia Medica and Therapeutics. Dr. Earl Randall Loeb, Ph.D., associate professor and Klaus R. W. Unna, M.D., assistant professor.

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University of Utah
School of Medicine

The first graduating class of the four-year School of Medicine has established and incorporated the Utah Medical Foundation — $2,850.00. "The object and purpose of this corporation shall be: To promote the cooperation of alumni and friends of the Medical School of the University of Utah in improving the undergraduate, graduate, and research functions of that institution; to establish scholarships, lectureships, professorships, research and student loan funds in that institution . . ." The Foundation has established the "Dr. W. R. Tyndale Lectureship in Medicine." Dr. George W. Thorn, Hersey Professor of the Theory and Practice of Physic, Harvard University School of Medicine, was the first speaker on the Tyndale Lectureship. He discussed "The Role of Endocrine Glands in Adaptation," and "Fatigue of Thyroid and Adrenal Origin."

New Appointments: George Sayers, M.S., Ph.D., former research assistant in physiological chemistry (instructor), Yale University, has been appointed assistant professor of pharmacology. Leon Ciereszko, Ph.D., former research biochemist of the Medical Division of Sharpe & Dohme, Inc., has been appointed instructor in biochemistry. Horace W. Davenport, Ph.D., formerly associate in physiology, Harvard University Medical School, has been appointed professor and head, department of physiology.

The University of Utah Medical School is the recipient of a recent grant of $92,000.00 from the United States Public Health Service for research in muscular dystrophy and related degenerative disorders. A considerable number of cases are available in Utah and nearby states for study and it is explained that church records and other local factors may throw considerable light on genetic aspects of the research. Dr. M. M. Wintrobe, Professor of Medicine, is director of the study and an advisory committee of nationally known scientists will be appointed.

The Church of Jesus Christ of Latter-Day-Saints has given to the School of Medicine the sum of $25,000.00 for rehabilitation, modernization, and purchase of supplies and equipment for the Department of Pharmacology and Physiology.

An anonymous donor has provided funds to the Utah Medical Foundation to present a series of lectures on current problems in pediatrics. The first lecturer in this series was Dr. Joseph Stokes, Jr., William H. Bennett Professor of Pediatrics, University of Pennsylvania. Dr. Stokes delivered two lectures on "The Study of Hepatitis," and "Some Uses of Gammaglobolin in Hepatitis and Other Infectious Diseases."

The second speaker in this series was Dr. A. Ashley Weech, B. K. Rachford Professor of Pediatrics, University of Cincinnati Medical School. Dr. Weech

gave lectures on "Physiologic Consequences of Inadequate Dietary Protein," and "The Role of Cortical Development in Determining the Behavior of Infants."

The Rockefeller Foundation has provided funds to establish a program in child psychiatry. Dr. Reynald Jensen, Associate Professor of Neuropsychiatry and Pediatrics, University of Minnesota Medical School, in charge of Child Psychiatric Clinic, University Hospitals, Minneapolis, is in Salt Lake City on the above grant for a period of two months to create interest in the establishment of a child psychiatric program in this city.

Dr. Horace Davenport, formerly Assistant Professor of Physiology, Harvard University School of Medicine, who will assume his duties as Professor and Head of the Department of Physiology October 1, gave two lectures on July 26 and 27—the first "The Role of Carbonic Anhydrase in Physiological Regulations," and "Current Knowledge of Gastric Secretion."

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Columbia University

On termination of a residuary trust set up under the will of Mrs. Edith Dunshee Converse, who died June 21, Columbia will receive one-half of the principal, the income to be used for the maintenance and equipment of a laboratory for research in the field of malignant diseases. The fund will be known as the "Edith Dunshee Converse Fund," newspapers report.

The W. K. Kellogg Foundation has given Columbia a grant of $60,000 to establish a course of training for hospital administrators. The work will be carried out in the DeLamar Institute of Public Health and will be available for graduate students. Plans already have been made for the Columbia faculty of medicine to carry out the training program in cooperation with hospitals and other organizations throughout the country.

The New York Orthopaedic Dispensary and Hospital and the Presbyterian Hospital at the Columbia-Presbyterian Medical Center were consolidated on July 23. The new corporation will be known as the Presbyterian Hospital in the City of New York. The orthopedic hospital will remain at its present site, 420 East 59th Street, until the fifth floor of the Presbyterian Hospital at 622 West 168th Street, part of the medical center, has been cleared of 70 student nurses housed there temporarily. The 70 student nurses will live in two additions to Maxwell House, now being built as part of the medical center's eight million to nine million dollar expansion program, which, it is estimated, will take about two and one-half years to complete. The orthopedic hospital erected its present quarters in 1916, with additions in 1925 and 1931 providing its present capacity of 145 beds in private rooms and wards. The Columbia-Presbyterian Medical Center currently combines services and facilities of the Presbyterian Hospital, Sloane Hospital for Women, Vanderbilt Clinic, Babies Hospital, Neurological Institute, Harkness Pavilion, Institute of Ophthalmology, J. Bentley Squier Urological Clinic, School of Nursing and the teaching facilities of the College of Physicians and Surgeons of Columbia University. Announcement was made also that a new 75 bed convalescent hospital for orthopedic patients would be built on property in King Street, Port Chester, N. Y., belonging to the orthopedic hospital. The Mary Harkness Home for Convalescent Care is on the 80 acre tract in Port Chester.

The Alfred P. Sloan Foundation has given $4,000,000 to provide and in part to maintain a proposed Sloan-Kettering Institute for Cancer Research, to be organized in conjunction with Memorial Hospital for Cancer and Allied Diseases, New York. The gift will provide for a building especially designed for the purpose and self contained in all its various research functions. It will be erected at an estimated cost of $2,000,000 on property now owned by Memorial Hospital adjacent to its present location. The facilities to be provided will be adequate to permit the exploration of all avenues that may be expected to contribute to

the objective. The entire project will be in keeping with a program of expansion at Memorial Hospital. In addition, the Alfred P. Sloan Foundation will undertake to provide $200,000 a year toward the operating cost for a definite period of ten years. In a statement to the press, Reginald G. Coombe, president of the hospital, said that, while the Alfred P. Sloan Foundation gift provides for most of the financial requirements of the research phase of the proposed Memorial Cancer Center, the center will not be fully effective from the point of view of its ability to render service until it is completed. It is planned to launch a public campaign to obtain the necessary $3,000,000 to $4,000,000 to provide for an increased bed capacity at Memorial Hospital proper, for fellowships for the training of specialized medical personnel and for equipment necessary to the servicing of the new Dr. James Ewing Hospital for Cancer to be erected at the center by the city of New York. The new institute will bear the name of the two men who have cooperated in many scientific endeavors, Alfred P. Sloan, Jr., and Charles F. Kettering, chairman and vice president and director of research, respectively, of General Motors. Mr. Sloan created the Alfred P. Sloan Foundation to advance in any proper way the interest of the community at large, with emphasis on economic education, giving to it in 1937 an endowment of $10,000,000 to provide for expanded activities.

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New York Medical College

Gifts totaling $293,744 were received in the year ending June 30, 1945, for endowment, research, and new equipment. Research grants total $108,600. The Anaconda Wire and Cable Company's grant of $45,000 for research in Industrial Medicine under the supervision of the Departments of Public Health and Industrial Hygiene, and Medicine and Pharmacology represents the largest single research program. Other grants for research include the following: Standard Oil Development Co., $15,000, for toxicity investigation; The Schering Corporation, $5,000, for research in the sulfonamides; Parke, Davis, $5,000, for clinical investigations; the John and Mary R. Markle Foundation, $13,450, for the study of two problems, malaria and peripheral circulation; and the Joshiah Macy, Jr., Foundation, $4,200, for research in the sulfonamides.

The principal additions to the endowment of the college include $50,000 from the estate of Kate Cary; $31,948.50 from the estate of Susan E. Urie; $15,000 from the estate of William Hull Walker; and $12,369 from the estate of Frederick K. Trowbridge.

The trustees of the Lillian Babbitt Hyde Foundation have established a special fund of $25,000 for the creation and continuation of a Diagnostic Clinic. The fund is to be expended over a period of three years and will provide a complete diagnostic service to all those in need of it regardless of their ability to pay.

In line with this it has already begun a survey of all chronic cases which are being referred automatically by the Outpatient Department.

Among the gifts for current projects was one of $3,000 by an anonymous donor for the redecoration of the Student Lounge. Work on the project has been completed for the opening of the summer term.

Promotions and New Appointments: J. Clifford Hayner, B.S., M.D., F.A.C.S., promoted to Professor of Anatomy and Director of the Department; George Kendall Higgins, B.S., M.B., M.D., M.S., Ph.D., Professor of Pathology and Director of the Department; James W. Benjamin, A.B., M.S., Ph.D., Associate Professor of Anatomy and Assistant to the Dean; Frank J. Borelli, B.S., M.D., to Associate Professor of Radiology and Director of the Department; Samuel Abbott Thompson, B.S., M.D., F.A.C.S., Associate Professor of Surgery has been named Chairman of the newly created Section of Thoracic Surgery; Lois C. Lillick, A.B., A.M., Ph.D., promoted to Assistant Professor of Bac-

teriology; Alan R. Cantwell, M.D., F.A.C.S., promoted to Assistant Professor of Orthopedic Surgery; Joseph Francis Rooney, A.B., M.D., M. Sc. Med. (Obstetrics and Gynecology) promoted to Assistant Instructor in Obstetrics and Gynecology. Dr. Rooney's duties will include the active supervision of the educational program for Interns and Residents on a salaried basis.

Ivan Clifford Hall, Ph.B., A.B., M.S., Ph.D., resigned as Professor of Bacteriology and Director of the Department.

The Photographic Service of the College and Hospital has been completely reorganized as the Department of Audio-Visual Education. New and expanded quarters for the Department have been created in a central location in the main college building. Philip Gian Netti, medical photographer, continues in charge of the operation of the Department with two full-time assistants, Whitney Hoyt, Staff Artist, and Christopher Tritsch, Medical Cartographer. The main auditorium and all classrooms have been completely equipped for Audio-Visual instruction. A 16mm. sound-on-film projector has been included in the new equipment. A comprehensive program in the full utilization and development of these instructional aids is already in progress.

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Medical College of Alabama

The Medical College of Alabama, Birmingham, opened officially June 4 with instruction of a junior class. On October 8 the School of Basic Medical Sciences on the university campus, where the first and second years are given, established in 1920, and its faculty will be absorbed into the new Medical College of Alabama. The School of Basic Sciences, direct successor in 1920 of the Medical College of Alabama at Mobile, organized in 1859, ceases to exist in October. The new Medical College of Alabama was established by action of the 1943 state legislature as a division of the University of Alabama. It was located in Birmingham in 1944 by vote of a special governor's commission. In 1945 it assumed title to Jefferson Hospital, Hillman Hospital, outpatient department, nurses' home and all other city and county property of Jefferson County. In addition, the county and city gave to the university one block of property directly west, one half of which will be the site of a new health department building supported by state, county and city and to be affiliated with the Medical College of Alabama. Also two other blocks of adjacent property have been acquired by purchase by the university to serve as sites for other hospitals such as the Children's Hospital, the Crippled Children's Clinic and the Negro Hospital, thus creating a four block medical center. In a fifth block south the university has purchased and remodeled apartment houses to provide living quarters for faculty and students. Under a ninety-nine year contract between the university and the county of Jefferson the Medical College of Alabama assumes responsibility for care of all indigent patients of county and city, maintenance of which is paid to the university on a per diem basis by the county. The 1943 appropriation included one million dollars for the building and equipment of a new medical school, which will be erected as early as possible after the war and connected under one roof with the new Jefferson Hospital. Under its contract the medical college receives authority for the appointment of the entire staff, medical and otherwise, of the combined hospitals.

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Medical College of the State of South Carolina

Dr. Joseph S. Rhame has resigned as clinical professor of surgery. An agreement has been reached under which the Roper Hospital board of commissioners will support a proposed clinic hospital for the college. The integration of these two institutions will be closer than it has been heretofore.

The medical college will undertake to construct and operate a teaching

clinic-hospital of about 325 beds, with quarters for intern and resident staff and for its pupil and resident nurses, and the board of commissioners will support this project.

The staff of the proposed medical college and clinic-hospital will be of the closed type, restricted to the faculty.

The full time medical staff of the hospital will be paid salaries fixed by the medical college authorities and a maximum salary will be set. Professional fees charged will not be lower than the average fee bill prevailing in this state.

The medical college will not compete with Roper in accepting city or county appropriations for the care of charity patients. This includes such Roper hospital services as for crippled children and cancer cases.

In the cooperative development of the medical center, the medical college will undertake to provide such special services as may not come within Roper's scope and will depend upon Roper for the use of such services as it will naturally possess as a community hospital.

Since the use of Roper as a teaching hospital entails a larger quarters in some departments, it will to the extent of its ability provide such necessary space in its new construction, while the medical college will supply the teaching equipment.

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University of Texas
Medical School

C. M. Pomerat, Ph.D., Professor of Anatomy, is a guest worker on invitation for a month at the Instituto de Salubridad Enfermidades Tropicales, Mexico City, D. F. He will work on tissue culture experiments with reference to reticulo-endothelial immune sera. Doctor H. W. Neidhardt of the Department of Pathology, University of Kansas School of Medicine, has been appointed Assistant Professor of Pathology.

W. A. Selle, Ph.D., Professor of Physiology, is a guest research worker for several months at the Massachusetts Institute of Technology, Cambridge, on problems in physical medicine, under the auspices of the Baruch Committee on Physical Medicine.

MacDonald Fulton, Ph.D., formerly Professor of Bacteriology at Southwestern Medical College, Dallas, has been appointed Visiting Professor of Pediatrics Research of the University of Texas Medical Branch, Galveston. Doctor Fulton will be in charge of bacteriological studies relating to Salmonella organisms as part of the Child Health Program supported by the William Buchanan Foundation of Texarkana.

The Smith, Kline & French Laboratory of Philadelphia has made a grant to the Pharmacology Laboratory of the University of Texas Medical Branch, Galveston, for a study of the influence of the reticulo-endothelial system in trypanosomiasis and syphilis. Paul L. Ewing, Ph.D., Associate Professor of Pharmacology, will have charge of the research effort and will conduct certain studies under the direction of Doctor Arthur L. Tatum, Professor of Pharmacology at the University of Wisconsin Medical School, Madison.

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University of Oklahoma
School of Medicine

The recent passage of appropriations bill 101 makes available $1,432,503 for construction of buildings, improvements and purchase of equipment for the school and associated hospitals. In a report to the appropriations committee, Dr. Tom Lowry, dean, recommended that the needs of the school of medicine be portioned in the following manner: $375,000 for the school of nursing; $175,000 for the isolation wing; $75,000 for the Outpatient Department; $400,000 for additional hospital beds; $225,000 for an annex to the medical school; $100,000 for remodeling, heating, power plant, laundry and shops.

The passage of house bill 200 changes the name of the Confederate Home, Ardmore, to the Southern Oklahoma Hospital, to be under the supervision

of the University of Oklahoma. A $250,000 appropriation will be used to match a similar total from the citizens of Ardmore; this total, it is hoped, will be matched with a similar appropriation from federal funds. Dr. George N. Barry has resigned as medical director of the State University Hospital and the Crippled Children's Hospital in order to be available for a commission in the U. S. Navy.

Mr. Paul H. Fesler has resigned as executive secretary of the Oklahoma State Medical Association to return as administrator of hospitals. Mr. Fesler will continue with the state medical association on a part time basis pending the appointment of a successor.

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State University of Iowa
College of Medicine

Dr. Harry P. Smith, professor and head of the department of pathology, has resigned to accept a similar position at Columbia University. Dr. Clarence Van Epps retired as head of the department of neurology but will continue on a part time basis as a member of the faculty.

Promotions: Dr. Adolph L. Sahs, assistant professor to associate professor of neurology; Dr. John R. Porter, assistant professor to associate professor of bacteriology; Dr. John W. Dulin, associate professor to professor of general surgery; Dr. Stuart C. Cullen, assistant professor to associate professor of general surgery; Dr. Emory D. Warner, associate professor to professor of pathology; Dr. Albert P. McKee, associate to assistant professor of bacteriology.

The facilities of the College of Medicine and the University Hospitals are available to medical graduates desiring to enroll for postgraduate studies. To meet the variable needs of physicians, several types of courses are planned. Provisions are made for those desiring an informal review and survey of present trends in medicine as well as for those desiring training which will meet the requirements of the various Specialty Boards, and for those wishing to pursue research in some particular field. A bulletin giving details of the courses has been prepared and is now in distribution. Because of the necessity of limiting the number that can be accommodated at any one time, first priority will, for the present, be given to returning service men.

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Western Reserve University
School of Medicine

Dr. Charles F. McKhann, assistant to the president in charge of research, Parke, Davis & Company, Detroit, has been named professor of pediatrics and director of pediatrics at University Hospitals. He succeeds Dr. Henry J. Gerstenberger as professor of pediatrics at Western Reserve and director of Babies and Children's and Rainbow hospitals. Dr. Gerstenberger will become professor emeritus of pediatrics beginning with the next school year. The appointment became effective as of July 1, but Dr. John A. Toomey will remain as acting director of University Hospitals until September 1 and will also continue as professor of clinical pediatrics and contagious diseases at the school of medicine and in charge of the departments of contagious diseases at the university and city hospitals. Through the division of the department of hygiene and bacteriology two new departments have been created, the department of preventive medicine and public health and the department of bacteriology. Dr. James A. Doull, as head of the new department of preventive medicine and public health, will fill the newly created Elizabeth Severance Prentiss chair in preventive medicine. The department will be financed by an annual income from the Elizabeth Severance Prentiss Fund.

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University of Pennsylvania
School of Medicine

The university received a gift of $155,000 from the estate of the late Dr. George E. de Schweinitz, who died August 22, 1938. The bequest will be used

to establish a fund to support the department of ophthalmology and to create a professorship to be known as the "William F. Norris and George E. de Schweinitz Professorship of Ophthalmology." Dr. Norris was the first professor of ophthalmology at the medical school and Dr. de Schweinitz was professor from 1902 until 1929, when he became emeritus professor.

The University of Pennsylvania on July 25 was selected to administer an $80,000 research fund established by American manufacturers of penicillin for Sir Alexander Fleming, discoverer of the drug. According to the New York Times the selection was a tribute to the role played in the development of the drug by Dr. Alfred N. Richards, vice president of the university in charge of medical affairs, who is credited with starting the program of producing the drug commercially. Under the terms of the trust, Sir Alexander has the widest latitude in administration of the money for scientific purposes. The results of the research will be free to any one. The work will be carried on by Sir Alexander at St. Mary's Hospital Medical School, University of London.

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Woman's Medical College

Dr. Mollie A. Geiss has been appointed Professor of Pathology to succeed Dr. Helen Ingleby, who resigned in June to accept the position of pathologist at the Jewish Hospital in Philadelphia. Dr. James O. Brown, Associate Professor of Anatomy and Acting Head of the Department of Anatomy at the Woman's Medical College of Pennsylvania, has been invited to be Guest Associate Professor of Anatomy at the University of Tennessee School of Medicine, for the summer quarter of 1945.

Major Margaret D. Craighill, Dean of the Woman's Medical College on leave of absence for military duty, visited the college recently. Major Craighill has just returned from an eight-month trip around the world during which she made an inspection of the facilities for members of the Women's Army Corps and of the Army Nurse Corps.

A gift of $500 was recently presented as a memorial by the faculty and friends of Dr. Eleanor H. Balph. Dr. Balph was Assistant Professor of Gynecology at the college at the time of her death in May. Dr. Mary M. Spears gave a similar gift in memory of Lt. William McIndo Spears, Jr., Inf., A.U.S.

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Syracuse University
College of Medicine

Wilfred W. Westerfeld, Ph.D., associate in biochemistry, Harvard Medical School, Boston, has been appointed professor of physiologic chemistry. Dr. Westerfeld succeeds Dr. Robert K. Brewer, who died in March.

Dr. John M. McKibbin, Ph.D., now Instructor in Nutrition in the Department of Biochemistry at Harvard Medical School and the Harvard School of Public Health, has been appointed as Assistant Professor of Physiological Chemistry. Dr. McKibbin received his early training in Biochemistry in Dr. Elveljem's laboratory at the University of Wisconsin.

Dr. Dan A. Richert, Ph.D., who received his training in Dr. Doisey's laboratory in St. Louis and who is now working in Dr. Cohn's Department of Physical Chemistry at Harvard Medical School, has been appointed as Instructor in Physiological Chemistry.

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University of Tennessee
College of Medicine

Dr. S. R. Bruesch is promoted from Assistant Professor to Associate Professor of Anatomy, Dr. Frank Harrison from Assistant Professor to Associate Professor of Anatomy, Dr. Francis Murphey from Assistant Professor to Associate Professor of Neurosurgery, Dr. James R. Reinberger from Associate Professor to Professor of Obstetrics and Gynecology, and Dr. R. O. Rychener from Assistant Professor to Associate Professor of Ophthalmology. Dr. Frank

E. Whitacre is promoted from Associate Professor of Obstetrics and Gynecology and is made Chief of the Division of Obstetrics and Gynecology. Dr. I. N. Dubin, formerly of Duke University, has been appointed Assistant Professor of Pathology and Bacteriology; Dr. John Hunter, Instructor in Physiology; Dr. Hugo Krueger, Associate Professor of Pharmacology; Dr. Richard Winger, Acting Instructor in Anatomy.

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Ohio State University
College of Medicine

The Ohio Legislature recently approved a special appropriation of $5,000,000 for a new Medical and Dental Health Center for the Ohio State University to be located at Columbus. This will mean improved undergraduate and postgraduate teaching opportunities, an expanded research program and enlarged clinical facilities at the University Hospital. A new 600 bed hospital is contemplated, with other additions and improvements to complete the Medical Center.

Dr. Charles A. Doan, Dean, announces that within the past two months the college has added to the full time teaching staff, Dr. Allan C. Barnes, as Associate Professor of Obstetrics and Gynecology and Dr. Shelby G. Gamble, as Assistant Professor of Physical Medicine.

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Jefferson Medical College

The 1944 Strittmatter award was presented to Dr. Jacob Parsons Schaeffer, professor of anatomy, during a special meeting of the Philadelphia County Medical Society May 16 "in recognition of his long and distinguished career as a teacher, author and scientist in the field of anatomy and his sincere and untiring devotion and constructive efforts to safeguard high standards of medical research." This is the twenty-second presentation of the award, which consists of a gold medal and scroll and was made possible in 1923 through the generosity of Dr. Isidor P. Strittmatter.

Dartmouth Medical School

Dr. Rolf C. Syvertsen, assistant dean since June 1944 and a member of the faculty since 1923, has been appointed dean of the medical school, effective July 1. He succeeds Dr. John P. Bowler, who has resigned because of pressure of his surgical work but who will continue as professor of surgery at the medical school. Dr. Syvertsen has been professor of anatomy at Dartmouth since 1938 and for many years has been secretary of the school.

Colby College, Waterville, Maine, has awarded the honorary degree of D.Sc. to Dr. Hermann M. Burian, ophthalmologist in chief, Dartmouth Eye Institute.

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Stanford University
School of Medicine

The establishment of the Borden Undergraduate Research Award in Medicine is announced. This award consists of $500 and is to be made each year by the President of the University on recommendation of the Committee on Medical Research of the School of Medicine to the senior student of the School of Medicine whose research during his undergraduate career in the Medical School is deemed to be the most meritorious. If, in the opinion of the Committee on Research of the School of Medicine, no student has done research worthy of an award no recommendation need be made for that academic year.

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Vanderbilt University
School of Medicine

Dr. Ernest W. Goodpasture, since 1924 professor of pathology, and also associate dean, has been appointed dean to succeed Dr. Waller S. Leathers, who retired June 30. Dr. Sam L. Clark, professor of anatomy, has been named associate dean, and Dr. William W. Frye, associate professor of preventive medicine and public health, has been designated professor and head of the department of preventive medicine and public health.

Georgetown University
School of Medicine

Georgetown University Hospital has launched a campaign for funds to build a new institution. The campaign goal is $750,000, the same sum needed to supplement and guarantee a federal grant of $1,820,000 provided under the Lanham act for construciton of the new building. The proposed hospital is to have 400 beds and will be erected adjacent to the university medical and dental schools. The new building will replace the old Georgetown University Hospital, which has a capacity of 241 beds and which was erected in 1898.

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Wayne University
College of Medicine

Lt.-Col. Hardy A. Kemp, M.D., secretary of the Army Medical School in Washington and former dean of the University of Vermont College of Medicine and the College of Medicine at Ohio State University, has been appointed dean. Dr. Kemp will assume his duties at the medical school as soon as he is released by the Army. He succeeds Dr. Edgar H. Norris, who resigned last March. Dr. Kemp is a specialist in bacteriology and preventive medicine and now serves as the Army's executive officer in tropical medicine.

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University of Arkansas
School of Medicine

Frederick E. Emery, Ph.D., associate professor of physiology, University of Buffalo School of Medicine, Buffalo, N. Y., has been appointed professor of physiology and head of the department of physiology and pharmacology. John E. Davis, Ph.D., is professor of pharmacology in the department.

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University of Mississippi
School of Medicine

Dean J. B. Looper has been granted leave of absence for the summer months. Dr. B. L. Guyton, a former dean, will serve as acting dean during this time.

University of California
Medical School

Dr. Guerne W. de Lappe, San Francisco, was awarded the gold headed cane given each year to a member of the graduating class. According to the University of California Clip Sheet, the award of the cane is an old English custom which was revived in 1939 by Dr. William J. Kerr, professor of medicine. Each year he presents a cane to the senior medical student who, in the opinion of his classmates and the faculty of the division of medicine, has demonstrated the most striking qualities of a true physician.

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University of Maryland
School of Medicine

The Ohio Chemical and Manufacturing Co. has awarded $4,000 to Dr. John C. Krantz, Jr., Professor of Pharmacology, to continue the studies in anesthesia. Dorothy K. Shipley has been appointed a fellow in pharmacology under this grant.

The Board of Trustees of the United States Pharmacopoeial Convention has again granted $2,800 to Dr. John C. Krantz, Jr., for studies in Pharmacopoeial Revision.

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University of Vermont
College of Medicine

Dr. William Eustis Brown, associate professor of preventive medicine, University of Cincinnati College of Medicine, has been appointed full time dean, effective September 1. Dr. Clarence H. Beecher, who has been serving as dean on a part time basis, will continue to serve the school as professor of medicine.

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University of Oregon
Medical School

Dr. Carl G. Heller, assistant professor of physiology, Wayne University College of Medicine, Detroit, has been appointed associate professor of physiology and medicine.

University of Nebraska
College of Medicine

The C. W. M. Poynter Foundation announces the appointment of Philip McIntosh as the C. W. M. Poynter Foundation Fellow in Medical Science for a period of a year beginning July 1, 1945. Mr. McIntosh received the Bachelor of Science Degree from Nebraska Wesleyan in May, 1945, and has completed his first two years of medicine in the University of Nebraska College of Medicine.

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University of Pittsburgh
School of Medicine

The school offers an Orientation Course in Clinical Allergy, under the sponsorship of the American Academy of Allergy, for five days, October 1 to 5, 1945, inclusive. Fee $40.00; for veterans, service men, and residents $10.00. Registration for evening round table conferences only by special arrangements.

Inquiries should be addressed to William S. McEllroy, M.D., Dean, School of Medicine, University of Pittsburgh, Pittsburgh 13, Pennsylvania.

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Tulane University of Louisiana
School of Medicine

Dr. John C. Henthorne, Jackson, Miss., was recently appointed assistant professor of pathology.

Long Island College of Medicine

Dr. George B. Ray, executive director of the department of physiology and pharmacology since 1933, died. At the time of his death, Dr. Ray was doing essential war work in a research program under the sponsorship of the Committee on Medical Research.

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Louisiana State University
School of Medicine

Dr. B. I. Burns retires from the deanship August 31. He will be succeeded by Dr. Wilbur C. Smith, for many years athletic director of Tulane University of Louisiana.

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University of Kansas
School of Medicine

Dr. Frank C. Neff, Kansas City, on June 30 retired as professor and head of the department of pediatrics and has been succeeded by Dr. Herbert C. Miller, Jr., New Haven, Conn.

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University of Colorado
School of Medicine

Dr. James Bernard McNaught, associate professor of pathology, Stanford University School of Medicine, San Francisco, has been appointed professor of pathology.

General News

National Board of Medical Examiners

Dr. Loren R. Chandler, Dean Stanford University School of Medicine, has been appointed a member of the Board to succeed the late Dr. Maurice H. Rees. Dr. Chandler will represent the Association of American Medical Colleges. Dr. John H. Musser, Professor of Medicine in Tulane University School of Medicine, succeeds Dr. Reginald Fitz as a representative of the Council on Medical Education and Hospitals of the American Medical Association. Dr. Eugene M. Landis succeeds Dr. Walter L. Bierring. Dr. Robert W. Keeton, University of Illinois College of Medicine, and Dr. George H. Smith, Yale University School of Medicine, have been elected members of the Executive Committee. Dr. Smith represents the Association of American Medical Colleges on the Board. Dr. B. O. Raulston, dean, University of Southern California School of Medicine, is the third representative of the Association on the Board.

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Association of Medical Illustrators

Mr. Tom Jones, professor of medical and dental illustration, University of Illinois Colleges of Medicine, Dentistry and Pharmacy, Chicago, was elected president of the Association of Medical Illustrators at its organization meeting in Chicago, July 16-19. Other officers include Mr. Willard C. Shepard, art editor, W. B. Saunders, publishing company, Philadelphia, vice president; Muriel McLatchie, Massachusetts General Hospital, Boston, secretary, and Elizabeth Brödel, New York, treasurer. The association was formed to promote the study and to encourage the advancement of medical illustration and allied fields of visual education to promote understanding and cooperation with the medical and dental professions, including public health, nursing and medical education.

Abbott Laboratories Research Fellowships

The Abbott Laboratories, North Chicago, Ill., appropriated $50,000 to provide for research fellowships in ten universities. Under the terms of the grants, $5,000 has been given each university to support research in the field of medicinal products during a five year period beginning a year after cessation of hostilities. The universities are to have the sole right to publish, patent, license or otherwise dispose of the results of the research conducted. The grants do not restrict the universities regarding the type or scope of the problem selected within the specified field of research. The ten universities and the fellowships to be established in them are California Institute of Technology, Pasadena, Calif., research in physical chemistry and biophysics; Cornell University, Ithaca, N. Y., research in bacteriology; Harvard University, Cambridge, Mass., research in pharmacology; University of Illinois College of Medicine, Chicago, research in pharmacology; Massachusetts Institute of Technology, Cambridge, research in organic chemistry; University of Minnesota, Minneapolis, research in biochemistry; Ohio State University, Columbus, research in organic chemistry; Purdue University, Lafayette, Ind., research in organic chemistry; Tulane University of Louisiana, New Orleans, research in chemotherapy and tropical diseases, and the University of Wisconsin, Madison, research in nutritional chemistry.

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Medico-Legal Conference and Seminar

The Department of Legal Medicine of the medical schools of Harvard, Tufts and Boston University in association with the Massachusetts Medico-Legal Society, will present a six day (October 1-6) program of lectures, con-

ferences and demonstrations having to do with the investigation of deaths in the interests of public safety. Attendance during five of the six days of the course will be limited to fifteen persons who have registered in advance. On one day (October 3) the program will be open to any physician, lawyer, police official, or senior medical student who may care to attend. Further information may be obtained from the secretary of the Massachusetts Medico-Legal Society, 25 Shattuck Street, Boston.

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W. K. Kellogg Foundation Education Program for Medical Veterans

The President of the W. K. Kellogg Foundation, Dr. Emory W. Morris, has announced a program under which funds will be available to assist a limited number of medical schools in the United States and Canada in developing comprehensive programs of graduate and postgraduate medical education. The immediate objective of the program is to help extend educational facilities for medical veterans. The long range objective is to encourage schools to develop permanent programs of postgraduate medical education.

The Foundation has long been interested in medical education, especially at the postgraduate level. It believes that medical schools should accept the responsibility of providing not only good undergraduate and graduate medical education, but also continuing or postgraduate education for all of the physicians in the area which the school serves.

Under this program requests for funds have already been approved for the following schools: University of Illinois College of Medicine; University of Minnesota Medical School; University of Oregon Medical School; College of Physicians and Surgeons, Columbia University; Cornell University Medical College and New York University College of Medicine, State University of Iowa College of Medicine.

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Waverly Press Receives Navy Award

The Waverly Press of Baltimore recently received the Navy Commendation Award. Only recently created, the Navy Commendation Award for Printers was established especially as an award for outstanding performance and service to the United States at war. Waverly Press is one of only five printing establishments in the United States to receive this recognition. For an organization to be eligible for the award 50 per cent of its total production for six months past must have been war work and 35 per cent of its volume must have been work done directly for the Navy, Coast Guard or Marine Corps. Founded in the eighteen-nineties the Waverly Press has become a Baltimore institution known around the world as one of the largest producers of scientific and technical books and periodicals.

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Eighteenth Anniversary Issue of the Hebrew Medical Journal

Volume I, 1945, eighteenth anniversary issue of the *Harofe Haivri* (The Hebrew Medical Journal), edited by Moses Einhorn, M.D., has just made its appearance. This special issue is dedicated to the late Henrietta Szold, distinguished humanist and Zionist, who harnessed American Jewish womanhood in a great organization, Hadassah, which is responsible for the vast network of medical and sanitary installations in Palestine, making it the outstanding health center of the whole of the Middle East.

Book News

Textbook of Neuropathology

By Arthur Weil, M.D., Associate Professor of Neuropathology, Northwestern University Medical School. Ed. 2. Grune & Stratton, New York. 1945. Price, $5.50.

Continues to maintain its high standard of excellence as a text for the student and a reference for the research worker. Combines the technical standpoint of the pathologic laboratory with the broader biologic outlook of the clinic. Detailed neuroanatomic and histopathologic descriptions, embracing every aspect of disease of the nervous system structures, are supplemented with chemical and physicochemical data. In relating the microscopic picture to the disturbed physiologic functions of the living nervous system, the discussion aids the neuropsychiatrist in gaining a deeper insight into the complex mechanisms of neurologic diseases. Special technical features of the book are a set of statistical tables that convey data concerning the development and the chemical composition of the nervous system, and separate sections covering the approved technic of postmortem examination of the brain and standard methods of fixation and staining.

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Rypins' Medical Licensure Examinations: Topical Summaries, Questions and Answers

Under the editorial direction of Walter L. Bierring, M.D., Member, National Board of Medical Examiners; Secretary, Federation of State Medical Boards of the United States; with the collaboration of a Review Panel. Ed. 5. J. B. Lippincott Company, Philadelphia. 1945. Price, $6.

This is more than an aid to getting ready to be examined for a license to practice medicine. It is a good book to keep handy for use during leisure moments because it gives so much information on so many topics in a readable, concise manner. It is informative; well written by men of authority.

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A Synopsis of Medicine

By Sir Henry L. Tidy, Consulting Physician to St. Thomas Hospital. Ed. 8. The Williams & Wilkins Company, Baltimore. 1945.

A short cut to a mass of information about everything that may or can afflict man. A good book to have to refresh one's memory, especially if one wants to do a little browsing on this or that. Deserves a place on every physician's book-shelf.

The Basis of Clinical Neurology: The Anatomy and Physiology of the Nervous System in Their Application to Clinical Neurology

By Samuel Brock, M.D., Professor of Neurology, New York University College of Medicine. Ed. 2. The Williams & Wilkins Company, Baltimore. 1945. Price, $5.50.

Presents a rational basis of clinical neurology that is clear, reliable and up to date based on a thorough understanding of neurophysiology and neuroanatomy. An excellent book; well illustrated; good bibliography.

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Peridontal Diseases: Part I. Soft Tissue Lesions of the Oral Cavity: Part II

By Arthur H. Merritt, D.D.S. Ed. 3. The Macmillan Company, New York. 1945. Price, $3.50.

For the dentist.

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Textbook of Organic Chemistry

By E. Wertheim, Professor of Organic Chemistry, University of Arkansas. Ed. 2. The Blakiston Company, Philadelphia. 1945. Price, $4.

Complete and very understandable for the beginner. Good for the premedic.

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Physical Diagnosis

By Ralph H. Major, M.D., Professor of Medicine, University of Kansas School of Medicine. Ed. 3. W. B. Saunders Company, Philadelphia. 1945. Price, $5.

A deservedly popular text for physical diagnosis. Rewritten and brought up-to-date.

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A Manual of Surgical Anatomy

By Tom Jones and W. S. Shepard. Prepared under the auspices of the Committee on Surgery of the Division of Medical Sciences of the National Research Council. W. B. Saunders Company, Philadelphia. 1945. Price, $5.

A book which every physician should possess. The drawings are not only accurate but intensely interesting and informative. The illustrators are masters in their field and well known. It is a beautiful surgical anatomy in compact form. It should find a useful place with civilian surgeons particularly. The explanatory index makes this a perfect work in this field.

Refraction of the Eye

By Alfred Cowan, M.D., Professor of Ophthalmology, Graduate School of Medicine, University of Pennsylvania. Ed. 2. Lea & Febiger, Philadelphia. 1945. Price, $0.75.

This work is an eminently successful attempt to employ the theory of ophthalmic optics in such a way that the clinical aspects emerge logically and in orderly sequence from their bases of scientific facts. The book reflects the experience gained in over twenty-five years of teaching at the Graduate School of Medicine of the University of Pennsylvania and over thirty-eight years of practice of ophthalmology. This new edition has been thoroughly revised and brought fully up to date in all the scientific and technical aspects of the subject. A unique feature of the work is the space given to optical theory. Elementary applied physics and simple mathematics are included especially in those chapters which deal with plane and spheric surfaces. The method followed throughout is based on detailed experiment, example and frequent repetition.

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Essentials of Histology

By Margaret M. Hoskins, Ph.D., and Gerrit Bevelander, Ph.D., Department of Anatomy, Graduate School and College of Dentistry, New York University. The C. V. Mosby Company, St. Louis. 1945. Price, $3.50.

A very good synopsis of histology; sufficient for the dental student and even the medical student will find it useful. It is well and profusely illustrated.

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Psychiatry in Modern Warfare

By Edward A. Streckler, M.D., Professor of Psychiatry, and Kenneth E. Appel, M.D., Assistant Professor of Psychiatry, University of Pennsylvania School of Medicine. The Macmillan Company, New York. 1945. Price, $1.50.

A comparative study of the neuropsychiatry of the two wars in two parts: I. Psychiatry and the Two World Wars; II. Demobilization and the Return to Civilian Life. A very interesting book.

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The Care of the Neurological Patient: Before, During and After Operation

By Ernest Sachs, M.D., Professor of Clinical Neurological Surgery, Washington University School of Medicine. The C. V. Mosby Company, St. Louis. 1945. Price, $6.

A valuable book for the intern, the house officer and the young neurosurgeon based on a long experience by an authority in this field.

An Introduction to Medical Science

By William Boyd, M.D., Professor of Pathology and Bacteriology, University of Toronto. Ed. 3. Lea & Febiger, Philadelphia. 1945. Price, $3.50.

The object of this work is to offer a general introduction to the study of disease, to its causes and the bodily changes which accompany it. The premedical student will find it useful.

The first section of the book deals with the general principles of disease, the second with the diseased organs, and the third with some practical applications. The structure and function of each organ is summarized, but only those facts are mentioned which are essential to the understanding of the changes that occur in the diseased organ and the symptoms which these changes produce.

A considerable number of changes have been made in this edition. A new chapter has been added on The Principles of Treatment which discusses the sulfonamide group of drugs, penicillin, immunotherapy, organotherapy, and physiotherapy in its varied forms. The details of treatment are considered in connection with each individual disease. The management of cases of pneumonia has been expanded. More attention has been paid to nutritional deficiencies, and the section on vitamins has been brought up to date. Among the new material may be mentioned the Rh factor, the relation of the sex hormones to cancer of the prostate, and disseminated sclerosis. Use has been made of the newer nomenclature of bacteria.

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Effective Living

By C. E. Turner, Dr. P.H., Professor of Public Health, Massachusetts Institute of Technology, and Elizabeth McHose, M.A., Chairman of the Health Council, Senior High School, Reading, Pa. Ed. 2.

The purpose of this book is to help youth discover ways of effective living. The text is reasonably complete in factual material presented in easily comprehensive terms. Three parts: I. Effective Living for the Individual; II. Effective Living in the Family; III. Effective Living in the Community.

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Handbook of Practical Bacteriology: A Guide to Bacteriological Laboratory Work

By T. J. Mackie, M.D., Professor of Bacteriology, University of Edinburgh, and J. E. McCartney, M.D., Director of Research and Pathological Services, London County Council. Ed. 7. The Williams & Wilkins Company, Baltimore. 1945. Price, $5.

A deservedly popular book with medical students.

Men Under Stress

By Roy R. Grinker, M.D., and John P. Spiegel, M.D., Army Air Forces. 1945. The Blakiston Company, Philadelphia. 1945.

It records the experience of military psychiatrists working with combat soldiers overseas in an active theatre of operations, and returnees suffering from war neuroses hospitalized for rehabilitation. Sixty-five case histories are described in detail, and the various corrective treatments are carefully and clearly explained. Included also are the methods by which drugs have been used in psychiatric treatment in this war with remarkable success.

The publication of the book is most opportune for, as the authors say, "it is a moot question whether in the peace to follow this conflict, the degree of stress on the average individual will be much less than that imposed by war." Large populations throughout the world face difficult realities. Never in the history of human behavior has it been so important to understand the psychological mechanisms of "normal" individuals in situations of stress.

The presentation has been kept particularly free of scientific jargon so that the book may be of maximum service to everyone in military and civilian life interested in human beings under stress and the successful methods of treatment now available.

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Practical Anatomy of the Rabbit

By the late B. A. Bensley, Ph.D., formerly Professor of Zoology, University of Toronto. Ed. 7. Revised and edited by E. Horne Craigie, Ph.D., Associate Professor of Comparative Anatomy and Neurology, University of Toronto. The Blakiston Company, Philadelphia. 1945. Price, $3.50.

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Treatment in General Practice

By Harry Beckman, M.D., Professor of Pharmacology, Marquette University School of Medicine. Ed. 5. W. B. Saunders Company, Philadelphia. 1945. Price, $10.

The author must be congratulated in maintaining the high standard of his work. This revision brings the text up to date. One question: Is it worth while to give 72 pages of bibliography? Does this add anything to the value of the work?

New (2d) Edition *Just Ready*

Nitrous Oxide-Oxygen Anesthesia

By F. W. CLEMENT, M.D., Major, M.C. (A.U.S.)

Formerly Director of Anesthesia at Flower Hospital, Toledo Dental Dispensary; Anesthetist to Toledo, Mercy and St. Vincent's Hospitals, Toledo, Ohio, etc.

Octavo, 288 pages, illustrated with 92 engravings. Cloth, $4.50.

This work presents the technique in the administration of nitrous oxide-oxygen anesthesia as developed by the late Dr. E. I. McKesson and by the author. The book brings this method of pain-relief to practically ultimate perfection and has extended the scope of nitrous oxide-oxygen anesthesia to include every operative procedure in both the general surgical and dental fields. The work shows the result of years of painstaking study and clinical observations. It now meets the needs of every condition of patient.

This thoroughly revised edition shows the results of the greatly accelerated research and investigation brought about by war conditions. It offers a more detailed method of administration, shows the dangers associated with prolonged oxygen deficiency, the mechanism and treatment of shock and the role of carbon dioxide in the protection of the body in lowered oxygen intake. This work summarizes the author's experience and observations covering many years of active practice and research in both civil and military life.

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